LAND ECONOMICS

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Land Reform in Poland: 1920-1945†

By DIMITRI T. PRONIN*

REACTIONARY and backward in land reform is a charge often made against Poland but a thoughtful inspection of the background and of the problems involved should not only correct this view but should bring into sharper focus a pattern of methods and forces which are at grips in the world today for far greater prizes than Polish agriculture alone. A survey of land tenure relationships (1) in the former independent Polish state (1918-1939), (2) during World War II (1939-1945), and (3) in present-day Poland is revealing.

I. Independent Poland: 1918-1939

Some idea of the importance of agriculture in the economy of pre-1939 Poland may be had from farm population statistics. In the Poland of 1920-1939, 75 per cent of the total population, i.e., some twenty-five million people, lived on farms. (For purposes of orientation it might be mentioned that in the United States during this period the farm population constituted less than 25 per cent of the total.)[1] Polish industry likewise was in great measure dependent upon agriculture, being concerned largely with agricultural products.

Since the fighting in World War I continued uninterruptedly for nearly four years on Polish territory, Polish agriculture suffered greater damage from that war than did the agriculture of any other European country. Poland lost more than a million and a half farm buildings and one-third of its livestock; and 20 per cent of its arable land area was put out of production for several years following the war.[2] In addition to this, large parts of the country had been drained of manpower by conscription and forced evacuation.

† The author of this article from 1928 to 1939 was employed by the Polish Ministry of Land Reform and Agriculture in the land reform program of Poland. His work was in Eastern Poland as chief of drainage works in the Kowel district in the province of Volhynia. During the war he had opportunity to observe the land reform of the Soviets in Eastern Poland, German agrarian policy in Poland, and in 1944-45 the agrarian policy of the Soviet-dominated Polish Government.

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The author wishes to thank Professor Francis Hole of the University of Wisconsin Soils Department and Professor Edmund Zawacki of the Slavic Languages Department for aid in the stylistic presentation of this paper and Professor K. H. Parsons of the Department of Agricultural Economics for help in collecting the necessary statistics.

[1] L. Howard, *Labour in Agriculture* (Oxford University Press: 1935).

[2] R. Dyboski, *Poland* (New York: 1933).

In spite of these devastations recovery was rapid, however, due partly to the indefatigable industry of the Polish farmers and partly to the measures taken by the government for improving agriculture. In 1921, the first peace year for Poland, the ruined country had to import seven million tons of food without being able to export anything. In the next year Poland became an exporting country and remained so on an increasing scale up until 1939. Livestock production improved from year to year both in quantity and quality. Farm buildings were rebuilt. Increasingly wider use was made of high quality seeds, fertilizers and machinery. These improvements continued at a commendably high rate considering the difficult domestic and international situations under which Poland was laboring.

When the Western Powers officially recognized the Polish state after World War I, Poland became a nation reunited after a century and a half of existence as three different partitions in three different empires. The eastern section had been a part of the former Russian Em-

pire; the western, a part of Germany; and the southern, a part of the former Austro-Hungarian Empire. Even after the recognition of the new independent Polish state, each one of these three former partitions continued to live by the civil laws of the empire to which it had formerly belonged. Only gradually did the new Polish laws replace the old regional ones and finally unify the three separate sections under a single code.

The situation in each former partition was unique with regard to land ownership also. The constructive efforts of Poland, therefore, were directed to three different sets of legal, social, economic and agricultural problems.

Division of Big Estates and Creation of Middle-sized Farms. One of the most important actions of the new government was the launching of a land reform program, the aim of which was a more rational and equitable distribution of land among owners. The unequal distribution of farm land in independent Poland had been recognized as a social and economic evil which demanded correction.[3] On the one hand there were the great estates and, on the other, the small farms of the peasants but there was no substantial core of medium-sized farms. As the peasant population was increasing, the average size of farm was decreasing. Obviously, the break-up of large holdings of agricultural land into a great number of peasant farms was not the whole solution, but even so, it was a procedure, with a double-cutting edge, something like an attempt to return from the factory system to small artisan workshops without imperiling productive efficiency. The essential problem of land reform in Poland was, therefore, to make a necessary and drastic change and at the same time to maintain a high standard of agricultural production.[4] The table presents statistically the distribution of land as it was in the year 1921 before the land reform was initiated.

During the Bolshevik advance into

[3] W. Babinski, *Niepodzielnosc drobnych gospodarstw wiejskich* in Polish (Warszawa: 1923); and B. Dederko, *The Most Advantageous Size of Farms* in Polish (Warszawa: 1928).

[4] Institut International d'Agriculture, *L'Organisation Scientifique du Travail Agricole en Europe* in French (Rome: 1931).

TABLE 1—SIZE-DISTRIBUTION OF FARMS IN THE PROVINCES OF POLAND IN 1921*

Size of Farms	Proportionate Percentage of Total Area of Poland	EXTENT OF FARMS															
		PERCENTAGE OF THE TOTAL AREA OF EACH PROVINCE															
		WEST SECTOR			SOUTH SECTOR				CENTRAL AND EAST SECTORS								
		Poznan	Pomorze	Slask Cieszynski	Krakow	Lwow	Stanislawow	Tarnopol	Kielce	Lublin	Lodz	Warszawa	Bialystok	Volhynia	Polesia	Nowogrodek	Wilno
Acres	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
5	5.1	2.3	2.3	8.5	13.8	16.1	21.1	13.2	5.2	2.6	3.3	1.9	1.5	2.1	1.6	1.8	1.5
5–12.5	15.9	3.8	4.1	17.1	35.4	32.7	25.7	23.7	24.2	15.7	14.7	7.6	10.5	18.6	12.4	16.4	11.6
12.5–50	41.6	28.9	28.2	35.3	35.6	23.2	19.9	24	49.8	54.1	53.5	46.2	55.3	53.3	42.8	44.5	43.6
50–250	12.2	22	31.6	16.6	4.7	4.7	7.6	5.6	3.3	7	7.4	15.5	15.7	8.5	14.2	13	20.8
250–2500	18.5	33.7	29.2	14	9.1	18.6	17.7	24.7	13.7	15.4	16.6	25.3	11.8	9.6	8.8	17	14.6
2500	6.7	9.3	4.6	8.5	1.4	4.7	8	8.8	3.8	5.2	4.5	3.3	5.2	7.9	20.2	7.3	8.1

* Data from Polish official statistics (*Wiadomosci Statystyczne* N3, 5, 20, published in 1924).

Poland in 1920, the Soviets held out the promise of land for the peasantry as one of their most persuasive proposals. The Polish Government was therefore constrained to make a definite offer of the same kind to the Polish peasants not only as a social measure but also as a political maneuver. Since the Constituent Assembly early in 1919 had already spoken out in favor of land reform, these principles were embodied in a bill on July 15, 1919, which set a limit of 150 acres for an individual holding, and made compulsory the sale by the State of those portions of the large estates which exceeded that limit.[5] In some parts of the country, where local conditions justified it, the maximum limit was raised to 1000 acres. This bill affected all farms owned by government, church and public institutions, as well as by private owners.

Landowners were allowed a certain period of time in which to dispose of excess land. By selling within this period of grace, a landowner could get a better price for his acres than if he waited until the government stepped in to sell them for him. The conditions of government sale provided that the owner should receive half price for his land, the average local market price being taken as the standard.

The new farmer buying the excess land could not enlarge his total acreage over 38, 62, or 112 acres, depending on the locality. Furthermore, 5 per cent to 30 per cent of the sale price was converted by the government into a fund for the homesteading of Polish war veterans.

Amendments to this bill accepted by the Diet (Sejm) in 1920, 1925, and in 1927, relaxed somewhat the restrictions of the original bill. According to these amendments the maximum area which could be left in any single estate was increased to 450 acres, except in the Eastern Section where the limit was raised to 1750, and the reform was declared not to apply to estates which were devoted to highly specialized or unusually productive agricultural enterprises of national importance such as cattle breeding, reforestation, etc.

That the amendments provided loopholes for abuses of the law by large land holders was a risk the Polish Government felt obliged to take, especially since even the total of all possible exemptions, legitimate and illegitimate, could have little effect on the overall program; in its revised form the law required the distribution of a minimum of 500,000 acres annually over a period of ten years. The maximum limit for new holdings was increased to 50 acres in central Poland and to 87 acres in certain other parts of the country. For classifications of the relative social weight of this aspect of the reform program, it might be pointed out that some 5.5 to 6.2 million acres, i.e., 8 to 9 per cent of the total agricultural area of Poland (68.25 million acres) were in estates larger than 450 acres.[6] It thus becomes evident that the reform which was fairly radical at first took a more moderate turn in proportion as the original desperate political maneuvers during the Polish-Bolshevik War (1919-1920) gave precedence in times of peace to calmer socio-economic considerations.

During the first six years (1920-1926), 1,500,000 acres or about one-fourth of the total eligible land was parceled in an orderly way under the control of the Ministry for Land Reform. The process was admittedly slow, but its advantage lay in the fact that it was only facilitated but not coerced by legislative measures.

We may now sum up briefly the parcellation aspect of the land reform in Poland from 1920 to 1939. Immediately after

[5] A. Wauters, *La Reform Agraire en Europe* in French (Bruxelles: 1928).

[6] Babinski, *op. cit.*, also, Dederko, *op. cit.*

the enactment of the first Land Reform Bill and the amendment of December 17, 1920, there was a rapid rise in the demand for land on the part of small farmers, and there was a corresponding supply of available land offered for sale by the estate owners who, under the terms of the bill, were threatened by compulsory expropriation. The famine conditions in the towns after 1921, of course, favored profits to the farmers. During the next few years, however, farmer incomes dropped and both the volume of land sales and their purchase prices dropped with them. The new amendments of 1925 gave a new stimulus to land transfer, and another period of rapid increase in peasant holdings set in, especially since the Government offered good credit facilities to peasant buyers. Transactions moved along much more rapidly under government control than under the semi-voluntary sales policy of the first period. The economic depression of the early thirties however again slowed up parcellation simply because lack of capital and low market prices for agricultural products took their toll. Still, from 1933 until 1939, parcellation gradually recovered from the effects of the depression and, by 1938, instead of the original maximum of 6.2 million acres subject to parcellation by the law, 6.6 million acres, or slightly more than the legal quota, had been parcelled out.[7] This excess arose from the fact that even exempted estates sold land to the peasant farmers voluntarily on the same terms as under the law.

Discontinuation of Rural Pasture and Forest Rights (Servitutus). The second aspect of land tenure reform confronting the Ministry for Land Reform and Agriculture was a phenomenon confined mostly to the Eastern Section of Poland, and it was a problem inherited from the time of the emancipation from serfdom of the peasants of the Russian Empire under Alexander II (1861). This was the problem of the management and use of pasture and forest land (the so-called "servitutus"). As serfs, the peasant farmers had a traditional right to use the landlords' pasture and forest lands, and even after their emancipation from serfdom they retained their old pasture and forest land easements.

In Poland each peasant was provided with a piece of land whose value for pasture and forest was substantially equivalent to his former pasture and forest land-use rights. Between 1919 and 1930 over 168,000 properties were freed of serf land-use restrictions, and nearly 1¼ million acres were given in return for the old land-use rights. By 1938 the total number reached 280,500 properties with an area of 2,488,250 acres which had been exchanged for their easements.[8] The land reform program, therefore, was proceeding in this way, too, toward its goal of transforming the countryside into middle-sized workable peasant farms.

Consolidation (commassation) of Scattered Parcels. A third and perhaps the most important aspect of the land reform program was the consolidation (commassation) of widely scattered parcels of land belonging to an individual farmer. In the Eastern Section of Poland where, for various local reasons to be described later, peasant farmer holdings were larger but also more scattered in separate long narrow strips than in other parts of the country, this operation was economically and socially not only more delicate but even of greater actual importance than the transfer of land from large to small owners. The scattered distribution of the individual peasant-farmers holdings in Eastern Poland, it may be explained, was the result of many different causes

[7] The Polish Ministry of Information, *Concise Statistical Yearbook of Poland, September 1939-June 1941* (Glasgow: University Press, 1941).

[8] *Ibid.*

inherent partly in former serfdom and partly in the conditions which prevailed after the abolition of serfdom as well as in local peasant inheritance customs.

In each of the three different former partitions, moreover, this particular problem varied in scope and in nature. In the former German partition, consolidation in re-established Poland presented no problem at all for Prussia had accomplished it quite thoroughly by 1821. In Austria-Hungary an imperial law of 1853 and a Galician Provincial bill of 1899 dealt with consolidation, but very little was accomplished. In the Russian partition the Stolypin reform of 1906-1911 brought considerable progress in the border provinces of Eastern Poland while in Central Poland the communities themselves accomplished a great deal on their own initiative without help from the Russian or Austrian governmental authorities.[9]

In all of Poland, upon its re-establishment as an independent state, a total of 28 million acres of peasant lands consisted of scattered parcels. This area amounted to more than one-third of the total arable area of the country and was situated almost entirely in the former Russian and Austrian partitions.

Because the differences between the legal systems of the three former partitions were obviously impediments to efficient procedure, a uniform "Commassation Law" for the whole of Poland was worked out in 1925 and amended in 1927. Since it was felt in official circles that consolidation of scattered parcels itself always increases agricultural production, the Polish law was regarded in principle as a measure of public welfare and accordingly local land offices (Urzedy Ziemskie) were authorized to proceed with commassation at the request of only a small fraction of the owners concerned and sometimes even without such a request. The surveying operations were payable in easy installments, hence the work proceeded very rapidly. Each year the acreage of land consolidated into single or, at most, two holdings per family, was doubled.

In 1930 alone, 1¼ million acres were so consolidated, making a total consolidated area to that date of 5 million acres. This was more than ⅕ of the original total unconsolidated area. By 1938, the last year for which statistics are available, the consolidated acreage reached 13,557,-500 acres,which means that nearly half of the original total area had been consolidated under the Commassation Law.[10]

Drainage and Irrigation in Connection with Consolidation. In connection with the consolidation of scattered parcels progress was made also in the drainage of low-lying fields and swamps, and this constitutes a fourth aspect of the Polish land reform program.

By the peace settlement following World War I Poland received over four million acres of unproductive swamp and marsh land in the provinces of Polesie and northern Volhynia (former Russian partition) along the river Pripet and its tributaries. These marshes are the largest in Europe and their transformation into productive farm lands would have meant an enormous addition to Polish agriculture. The technical problem involved was tremendous, for not only drainage but proper irrigation after drainage had to be provided. It was necessary to stabilize, straighten, or deepen (regulate) the stream channels as a preliminary to the large-scale drainage projects undertaken by the Ministry of Land Reform (later incorporated into the Ministry of Agriculture).

[9] W. Preyer, *Die Russische Agrarreform* in German (Iena: 1914).

[10] The Polish Ministry of Information, *Concise Statistical Yearbook of Poland, September 1939-June 1941* (Glasgow: University Press, 1941).

In the period from 1928 (when this program of land amelioration was begun) to 1938 (the last year for which statistics are available), 1,360,000 acres of swamp and marsh lands were converted into productive farm land, and all this was accomplished in the face of political difficulties.[11]

Especial Conditions of Land Reform in Eastern Poland. By comparison with the active political interference from across the Soviet border such things as the absence of adequate maps were minor difficulties, but they deserve mention nevertheless. For the former German and Austrian partitions, there existed the so-called "Kataster maps" (general survey maps of high precision made for land taxation purposes). The maps available for the former Russian partition dated from 1860-1880, and were all but useless. If better ones existed, they had either been destroyed or lost during the first World War.

The main complications in Eastern Poland impeding the land reform program in general and this aspect of it in particular were political, as has been emphasized. In this region about six or seven million were of non-Polish extraction—Ukrainians, Byelorussians and Russians. The Polish Government obviously had to proceed with tact, good will, tolerance and patience in order to include these people as collaborators in the formation of the young Polish Republic, but this was difficult, to say the least, at times such as after the assassination in quick succession by Ukrainian terrorists of two high ranking Polish government officials, Tadeusz Holowko and Minister of the Interior Pieracki.

Mistakes—some of them serious—were made by the comparatively young Polish state in its haste to cement the Eastern region integrally with central Poland, but the seriousness of these mistakes is mitigated in retrospect by the political conflict which was going on in this area. At times the Polish Government found itself forced by what it regarded as a political danger to use deplorable methods in what was euphemistically called "pacification," which only increased the alienation of the non-Polish elements of the population.

From 1920 to 1939, re-established Poland had to contend intermittently with pressure from the Soviet Union in this region in the form of "underground" terrorist gangs and local communist cells. Subversive leaders mostly from local communist groups in Poland were taken for instruction and training to Soviet Union and subsequently sent back into Poland equipped with high power arms and money for their followers. After their return they organized terroristic attacks especially against representatives of the administration and citizens loyal to Poland, whatever their nationality. For example, in North Volhynia in the summer of 1932 several score of policemen, village officials and non-Communist village leaders were wiped out in expertly organized riots in which the rioters were armed with Soviet-made tommy guns and hand grenades. Counter-violence by the Polish Government brought more atrocities also against the population which did not take active part in riots, but this was a part of the plan of the organizers of the partisan work. It created discontent and hostility toward the Polish authorities. The force of this hostility was counted on to help carry out future destructive operations. The author, in the course of his work as an engineer in the land reform program, had direct experience with these and other tumults of the same kind.

Very little was heard abroad about what was happening in Eastern Poland except

[11] *Ibid.*

Soviet protests against Polish mistreatment of minorities. The Polish Government, smarting under the appellation, "seasonal state," by its western neighbor, Germany, could ill afford to make accusations against the Soviet Union which would be hard to prove (because the rioters were Polish citizens) and which Western Europe was not disposed at the time to believe anyhow.

It is clear that such violent activities were not favorable to the orderly program of the Ministry of Land Reform. In general, they only retarded but did not interrupt the land reform work simply because the benefits of the reform were palpable and obvious to the people. There was a continuing popular demand especially for consolidation of scattered parcels and for the improvement of the land, and no agitation from the outside (radio broadcasts) nor from inside the country (local communist and terrorist activities) could change the attitude of the people toward the land reform itself. The work of drainage under the author's supervision proceeded more than once to the echoes of gunfire in the villages.

A short exposition of the ideological forces at work in this general region, quite apart from the terrorist methods employed, is not amiss at this point. In 1928, the adjacent areas of the Soviet Union were undergoing collectivization on a vast scale (beginning of the first Five-year Plan). Collectivization was a reorganization of agriculture on a quite different ideological and economical base from that on which the Polish land reform program was premised. In the first place, it was compulsory and uncompensated (liquidation of "kulaks"), and wherever it encountered resistance, active or passive, it was accompanied by mass deportations, arrests and confinement to concentration camps. The West, it would appear, has finally come to believe in 1948 what Poland was saying as early as 1948, viz., that millions of Ukrainian peasant farmers in the Soviet Union suffered the above-mentioned fate. The immediate consequence was complete chaos in the agricultural area of the U.S.S.R. and tens of thousands of people starving in the very granary of the Soviet Union.

Meanwhile in Poland, across the frontier from the U.S.S.R., the land reform and land improvement (drainage) programs were constantly increasing agricultural production, the peasant farmers were becoming better and better off, and and the export of agricultural products was growing steadily.

The first remedial measure against it was isolation (the "iron curtain"). All Soviet civilians were evacuated from a strip several miles wide along the Polish border, leaving only military personnel and the border guard. Simultaneously, subversive underground activities inside Poland were intensified. What followed in the region where the author was working was the application of a now familiar technique: incitement of the Ukrainian Nationalist movement in Polish Volhynia and Galicia (the Selrob organization) against the Polish authorities by the local communist undergrounds while, at the same time, safe from world scrutiny behind the iron curtain, Ukrainian nationalists in the U.S.S.R. were being deported to Siberia, thrown into concentration camps, or otherwise liquidated by the millions. Furthermore, every communist effort was being directed to obstruct and discredit the Polish Land reform program.

In Poland the Soviet effort failed, as has been pointed out, simply because of these programs the results of which were immediate and more eloquent than propaganda or even violence, and they continued to the limit of the Polish Govern-

ment's financial resources. Abroad, Soviet-inspired propaganda ideologically hostile to Poland's land reform program was successful in discrediting or, at least, in obscuring the truly great Polish achievements in this enterprise. Even without external political interference the difficulties were numerous and at times staggering.

In view of the foregoing exposition of the ideological background, independent Poland's land reform program acquired what seems in retrospect to have been of world-wide significance. The Polish-Soviet boundary in the period between 1920 and 1939 was the physical and ideological frontier of the western world.

II. World War II (1939-1944)

The Ribbentrop-Molotov line drawn in the secret Soviet-German pact of August 23, 1939, divided Poland into two more or less equal spheres of influence, each with its own subsequently imposed land "reform" policies.

German Occupied Poland and German Policy in Relation to Polish Farmers. German-occupied Poland was divided into two parts, one of which was incorporated into the Reich, and the other made into a Polish reservation, as it were, called the "Generalgouvernment." Specific German agrarian policies were put into effect in each of the German divisions.

The agrarian policy in the incorporated part was announced in a speech in 1941 by Arthur Greiser (Gauleiter and Reichsstaathalter in Posen, Warthegau):

> "God has helped us to conquer the Polish nation, which must now be destroyed; no Pole must have the right to own any land or house. In ten years the fields of Poland will be heavy with stacked wheat and rye raised and harvested by Germans, but not a Pole will remain."[12]

In implementing this policy, Polish estate owners were killed off, the peasant farmers were sent to labor camps in central Germany or driven into the General government with a maximum of 50 pounds of luggage, having been required to leave their houses and furnishings intact with the key on the outside of the door. In exceptional cases some peasants were left temporarily to work as laborers on the big farms newly acquired by the German State (Ostlandgesellschaft) or by German masters from other countries (Volksdeutsche Umsiedler). The policy, as is perhaps, self-evident, admits no need for further comment.

In the Generalgouvernment the German authorities were not interested in land tenure problems and took no steps to alter the *status quo* in this respect; they were interested only in exacting the high quotas set for agricultural products required by the German army, and their methods were as ruthless as they were efficient. In 1944, however, the German administration of the Generalgouvernment did try to settle some German Volksdeutsche Umsiedler from Yugo-Slavia and Bessarabia in the area near Lublin, but opposition from the Polish underground, which was well organized by that time, frightened the would-be settlers and forced the administration to abandon the project.

Soviet Occupation of Eastern Poland and Soviet Agrarian Policy Until June 22, 1941. In the Soviet sphere of influence east of the Soviet-German demarcation line (the river Bug), the development of new land tenure practices was somewhat different. The Soviet Authorities immediately set up local land offices (Zemotdely) without waiting for the decisions of the Peoples Assembly (Narodni Sbory) which convened in Lwow (Lemberg) on short notice to consider the future of the region. Within a few days the Soviets accom-

[12] S. Mikolajczyk, *The Rape of Poland* (New York: 1948).

plished their "land reform" even before the opening of the Peoples Assembly in Lwow. The western term "land reform" hardly fits the measures taken by the Red Army; Soviet terminology is more specific: "liquidation of land holders as a class and proletarization of the people working on land."

A program introduced in such haste with no regard for agricultural economics was obviously demagoguery pure and simple. No systematic attempt was made to organize collective state farms to be directed by trained agriculturalists. What was launched was a program calculated to set people against each other, to break their spirits, and to starve them into docile submission.

All big farms were divided into little parcels (as small as 6 acres). As a consequence, livestock perished, agricultural machinery was smashed, most farmers were left without enough land, and the new checkerboard of scattered small parcels was something quite different from the pattern of consolidated parcels made by the former independent Polish Government.

In dividing the big farms, all new boundaries of the parcels were marked on the ground only temporarily, and no title was provided, nor were any maps made of the new possessions. Obviously, the future could bring only more misunderstandings and quarrels among the new owners. Thus there was created complete chaos in land tenure relations, but this was exactly what the authors of these measures wished.

Such conditions destroyed the *esprit de corps* of the rural population (villages) and made effective resistance impossible when the Soviet authorities were ready to take the second more difficult and important step, namely, the liquidation of farmers whose possessions could be classed as middle-sized farms. Such farmers are called "kulaks" or rich peasants. The Soviet concept of "kulaks" is very flexible and can change in accordance with the demands of any given situation. In Eastern Poland farmers were included in the category of "kulaks" whose possession was more than 18 acres.

After the People's Assembly (Narodni Sbory) in Lwow, composed of local communists, had voted the incorporation of Eastern Poland into the U.S.S.R. a list was drawn up (toward the end of 1939 and early 1940) of "kulaks" in all areas administered by the Soviet Government. In the spring of 1941 there began the mass deportation of these unwanted farmers to forced labor camps in the U.S.S.R. while at the same time careful preparations were made for the third and last step in the program, i.e., organization of "collective farms."

So it happened, but the Soviets suddenly found themselves short of time. On the 21st of June, 1941, the formal opening of the first collective farm in Volhynia took place in the village of Uchowieck, Kovel district, and was named in honor of Stalin. Early in the morning of the 22nd of June, 1941, German troops crossed the demarcation line of the Soviet sphere of influence.

Land Ownership 1941-1944. From the 22nd of June, 1941, until the beginning of 1944 the German army occupied all of pre-1939 Poland, but it was so engrossed by military operations in Russia that only now and then was there any attempt to resettle German colonists, as was mentioned previously (Lublin region). At the end of July, 1944, after Soviet military forces re-entered Polish territory in pursuit of the retreating Germans, a "Polish Committee of National Liberation" was formed in Moscow from Polish communists (July 1944), and this committee was subsequently estab-

lished in Lublin as a new Polish Government. It was recognized at first only by its creators, i.e., the Soviet Government.

III. Present Day Poland under the Puppet Regime (1945-1948)

Agrarian Reform of 1945. By February 1945, all of Poland was occupied by the Red Army, and under its protection the Polish Committee of National Liberation extended its *de facto* power over all of former Poland which was left after the incorporation of slightly less than the eastern half into the Soviet Union.

Under the new regime the same kind of "agrarian reform" began as was pursued in Eastern Poland between September 1939 and June 22, 1941. The first step was, as in 1939, the "liquidation of big farms."

Snow covered the fields, the thunder of artillery could be distinctly heard in the west, but the division of the big farms into little pieces of about 5-6 acres went on. These little parcels were allotted to farmers most of whom were without any farm machinery, livestock, or work horses. The commissions which carried out the "reform" were composed of local members of P.P.R. party (Polska Partia Robotnicza—de facto, Polish Communist Party) and of one or two surveyors for technical work.

In statements put out for foreign consumption the Government set the maximum farm holding at 250 acres but, since the real goal was the elimination from society of owners of large farms, not only did the government confiscate all movable property from the large farms but also arrested all larger owners who had not already fled. Farmers taken into custody were not permitted to live in any district where they had owned a farm.

Deportation and Resettlement. During this same period preceding the Potsdam Agreement between the Soviet Union and the Western Powers, mass deportations of the population began, moving from eastern Poland to the newly occupied eastern parts of Germany which had been incorporated by the Soviets into Poland. What was the aim of this mass East-to-West movement of the farm population? The following analysis by the author is based on his own experience and on facts and figures at his present disposal.

In the first place, the deportation proceedings were unsound economically. Poland and the eastern Russian Zone of Germany had already been ruined by the war and European Russia, devastated first by the retreating Soviets and then again by the retreating Germans, was in desperate need of farm labor and stable conditions. Since the deportations were carried out entirely in Soviet-controlled territory, they cannot be regarded as merely imperialistic territorial aggrandizement. Likewise, the explanation that the main Soviet aim was to punish Germany or to compensate Poland is not convincing either, for the Soviets readily took into their service former members of the Nazi party, and they were not interested in compensating any invaded country, as can be seen from the examples of Lithuania, Latvia and Estonia which were incorporated into the U.S.S.R.

The fact remains, however, that the Soviets moved 5 million people at a moment when the railroads in this area were crippled and when all countries ruined by the war were appealing for help to the Western Powers through U.N.R.R.A. The trains were so crowded that people rode on the roofs of the cars, hundreds and thousands spent days on end in railroad stations and many died from illness. But the resettlement was not interrupted.

Only one explanation remains. The purpose of the Soviet Government in up-

rooting the rural Polish population from the old homesteads was to proletarize the people and to put them in complete dependence on the new local communist authorities. Organized revolt was thus made impossible. This interpretation is supported by the fact that the Polish land offices gave new settlers no titles and no maps of their new farms. Further confusion was deliberately created by sending in succession to the same little farm a second family and perhaps a third in a seeming haphazard manner calculated to prepare these people for future collectivization.

From the German areas ceded to Poland the population (about 7 million) was deported westward mostly into U. S.- and British-occupied Germany even more ruthlessly and thus, under high-sounding phrases of punishing war criminals and compensating Poland, the Soviet "reformers" had at one stroke proletarized about 12 million people, most of them farmers.

Results Summarized as of 1947

In two years (until May 1947) the Polish Government seized a total of 5,328,210 acres for "land reform" purposes.[13] Some 221,354 existing farms received 976,137 acres of new land, and 157,967 new farms were created out of 1,735,405 acres. The new farms averaged 10 acres each or, as Polish peasants put it, "too small to live on but too large to starve immediately." In such a way the number of small farms was increased and the standard of living on all farms was drastically lowered. The big "Junker estates" were not divided up. The Government operates (1948) 4200 such farms which correspond to the Soviet "Sovkhoz." Furthermore, the Soviet Army itself administers for itself (1948) about 2,000,000 acres of land in the "sovkhoz" manner in the new Poland.

The Outlook for the Future

Polish farmers imported (i.e., deported) from the east were placed on estates run as cooperatives, and they were told that this land would be divided among them within five years. It requires no great gift of prophecy, however, to say that such farms are destined to become identical in organization with the Soviet type of "kolkhoz" or collective farm. At any rate, indications of this ultimate destiny are many and quite clear. For example, as many as five families are often forced to live on a farm normally capable of supporting only one. Quite obviously, the intention is to force all these people to "voluntarily" adopt the collective system. In addition, not only propaganda but also taxation policies inside Poland are directed to this end.

In the light of the above discussion, the *Report*[14] of October 1, 1947 written by the FAO mission to Poland is seen to be justified by the facts but doomed to sterility in practical policy. In the section of the *Report* about the orderly settlement of the new territories, we find such recommendations: "Old farm units of about 30 hectars (75 acres) or less that have their own buildings should not be cut up but should be assigned to individual families"; and "Wherever settlers are already established on family farms of economic size, the suggested Emergency Service of the Ministry of Agriculture should provide them as rapidly as possible with a written title to their land and buildings, and a statement of purchase price and the conditions of payment. Only after this is done will the new settlers have the confidence to make improvements and to follow good farm practices."

These recommendations are excellent,

[13] *Ibid.*

[14] FAO of U. N., *Major Findings and Recommendations of the FAO Mission for Poland* (Washington, D. C.: 1947).

but the author has no expectation that such recommendations will be adopted. Polish agriculture under the new regime may perhaps seem at first glance to be making progress toward familiar western concepts of land tenure, but events are carrying it eastward toward the Soviet model. The Polish peasant farmer loves his own land, is individualistic and instinctively opposed to doctrinarian collectivization, but he is all but helpless now. War devastation on his lands, execution by both Nazi and Soviet of his most active leaders, increasing proletarization of him and his neighbors—all these factors make effective resistance by him impossible.

The former shield protecting western European agriculture, namely the land reform program in what was once independent Poland, is now broken and trampled. Of the personnel supervising the pre-war land reform in Poland, some workers were murdered by the Soviets in the Katyn forest, some by the Nazis in the gas chambers of Auschwitz, some perished in the heroic ruins of Warsaw, some are in exile, and a few perhaps are still alive in Poland. These last may indeed repeat—though not without justified bitterness—the Latin saying: Feci quod potui, faciant meliora potentes" (I have done what I could; let them do better who can.)

Housing in Chile

By ROBERT J. ALEXANDER*

HOUSING shortages are one of the characteristic features of our age. There is scarcely a country which is not faced to a greater or lesser degree with a lack of housing. This is true of the advanced industrial nations such as the United States as much as of the more "backward" countries such as those of Asia and Latin America. It is true of those which suffered severe physical destruction from the Second World War such as Great Britain or China as it is of those like Canada or the United States which were untouched by the actual physical force of the conflict.

In this general picture the hitherto backward nations which are now rapidly industrializing, such as some of the nations of Latin America, present special problems. The coming of industrialization has in many cases resulted in the very rapid growth of new cities, or the immense expansion of old ones. New industries have grown up in areas which were virtually uninhabited and it has been necessary for the employers to become home builders if they were going to have any place for their workers to live, and even if they were to entice any workers at all to their enterprises.

Finally, these nations are faced with the overall problem of adapting their new urban working class to the rhythm and ways of life of an industrial system. In many cases this has meant the transformation of what was formerly an uneducated, semi-serf class, more or less completely dependent on the rural landlord master, into a group willing and able to man the fairly complicated machinery of modern industry. This meant more often than not that new needs had to be created for the workers; they had to be made to feel that, if they worked regularly and submitted themselves to the discipline of factory life, they would be more than adequately rewarded in the higher standard of living. Housing has played a big part in this evolutionary process.

The problems in the field of housing which have faced Chile are characteristic of those with which most of the newly industrializing countries of Latin America are confronted. The Caja de la Habitacion Popular (Popular Housing Fund), the principal government housing agency in that country, has estimated that of the five million people living in Chile in 1941 about one and a half million lived in houses which they received free of rent; about two and a half million lived in houses for which they paid some rent, and about a million people lived in houses which were their own.[1] The first group includes vagrants, beggars, agricultural laborers and residents of institutions, as well as workers living in mining and industrial housing developments built by their employers. Thus there was a great variety from the point of view of quality in this type of housing.

In the second group—those who lived in rented houses—were 90% of those who were the Fund's prospective customers.[2] Included in this group were most of the slum dwellers of Santiago, for instance those living in the notorious "conventillos." The National Health Department estimated at the time of the Census of 1940 that there were 4,000 conventillos

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[1] *Seis Anos de Labor, 1939-1945* (Santiago de Chile; Caja de la Habitacion, 1945), p. 40.

[2] *Ibid.*, page 41.

in Santiago, housing from 300,000 to 350,000 people of which 80% were classed as "absolutely unhealthy." This included about forty percent of the population of the capital at that time.[3]

Some idea of the problem in the provincial cities can be gotten from the situation in Ovalle, where Dr. Guillermo Durruty found that of the five hundred working class houses in that town, some 390 consisted of only one room, 158 consisted of two, 25 of three and only 26 had more than three. This indicated that 58% of the workingclass families of that town had only one room, 31.5% had only two and only 10.4% had more than two rooms. Stated in another way, Dr. Durruty found that:[4]

20 bedrooms accommodated 1 person each
88 bedrooms accommodated 2 persons each
215 bedrooms accommodated 3 persons each
113 bedrooms accommodated 4 persons each
81 bedrooms accommodated 5 persons each
47 bedrooms accommodated 6 persons, etc.

One more evidence of the seriousness of the housing problem in Chile may be offered. In December 1942 the Director General of Labor made a sample survey of workingclass housing in various parts of the country. Some 286 families were included in this project, including a total of 1412 individuals. The results of this inquiry showed the following:[5]

Number of bedrooms	393
Number of beds	852
Number of beds per bedroom	2.16
Number of individuals per bed	1.66
Number of individuals per bedroom	3.60
Cubic meters of air per bedroom	41.02
Cubic meters of air per person	11.39
Earth floor houses	49
Rooms with wooden floor	237
Houses with candle light	145
Houses with electric light	141

[3] Luis F. Luengo Escalona, *El Problema de la Vivienda* (Santiago; Universidad de Chile, 1946), p. 47.

[4] *Ibid.*, p. 47-8 (Quoting Dr. Guillermo Durruty's *Habitacion Popular en Ovalle*) pp. 16-17.

A study made by the Caja de Habitacion Popular estimated that at the time of the 1940 census there was a deficiency of approximately 300,000 houses in the country, which had a total population of only five million.[6] This same survey estimated that, during the seven years ended in 1944, the annual deficit in housing was 57%. Only 7300 houses were built on the average though 12,800 per year were necessary to keep up with the population increase.[7]

The housing problem in Chile has been attacked on two levels. Many enlightened employers have carried out what in some cases are extensive housing programs, even without prodding from the government. In the second place, the government has sought to meet the problem in various ways: by itself constructing houses, by making the employers construct houses, and by aiding individuals or groups to carry out construction activities.

The mining companies have had a particularly pressing job to accomplish in this field. Since mining operations generally have to be conducted a considerable distance from any existing towns or cities, the mining companies had to build whole towns themselves. For instance, at Chuquicamata, the world's largest copper mine, in Northern Chile, not far from the Bolivian frontier, the company had to build a city for some twenty-five thousand people or more.

Perhaps the most difficult job in the field of housing done by any mining company is the Sewell camp of the Braden Copper Company, which is reached by single-tracked, company-built railroad from Rancagua, some twenty-five to thirty miles away. This camp is

[5] *Veinte Anos de Legislacion Social* (Santiago; Dirección General de Estadistica, 1945), p. 138.

[6] *El Problema de la Habitacion en Chile* (Santiago, Chile: Caja de la Habitacion, 1945) p. 21.

[7] *Ibid.*, p. 25.

constructed on the side of the great mountain which is the "El Teniente" copper mine. As one looks at the town one wonders how it keeps from sliding off down the steep sides of the precipice. There are no roads or streets in Sewell, because the grades are too steep, and although there are some reasonably straight stretches of sidewalk, most of the locomotion is up or down the interminable series of steps.

This peculiar topography has presented serious problems when it came to constructing homes for the company's workers. Almost all of these habitations are built with the back end stuck fast against the side of the mountain, and the front end resting on high stilts.

There are four classes of housing facilities in Sewell. Class A are the one-family houses occupied by the Americans who are on contract with the company. Class B is the type occupied by the high Chilean officials of the company, also one-family houses, pretty much like those of the Americans. These are the equal of any of our upper-middle-class residences.

Class C are apartment houses, occupied by white collar workers. They have four rooms and are generally neat and clean. They are much like American apartment houses, with a stairway in the middle of the building, and with the individual apartments opening onto that stairway. This is in contrast to the lower class houses, in which the apartments open out onto an open porch, which runs along the side of the buildings. These apartments, like the Classes A and B are for rent and they cost early in 1947 some sixty pesos a month, while in Santiago similar accommodations would have rented for as much as two thousand pesos a month.

The Class D houses where lower-ranking white collar workers and manual workers live are tenements, often of four or five stories. These apartments of working-class families consist of two, three or four rooms. Two-room ones are given only to couples with no more than one child; three-room ones are for families with from two to six children; and four-room apartments are for families with more than six children.

Class D houses have no inside water supplies, but have two water faucets on each floor on the porch which runs the length of the house. There are community shower and toilet facilities where there is always hot and cold water. There is no central heating in these houses, and the only heat is from the wood-burning stoves in each apartment.

In a move to try to prevent too severe overcrowding, the Braden Copper Company has ruled that if a worker wants to have anyone outside of his family live with them in their apartment he must get the permission of the welfare department of the company. The department generally allows this when orphaned children are concerned, or in the case of grandmothers or other close relatives of the workers. Widows of workers killed in the employ of the company can continue to live in the company houses indefinitely.

Single men at Sewell live for the most part in a series of houses which sit farthest up the mountainside. These buildings have rooms which are occupied by from six to eight men. Each worker's bunk is protected by wire and a door, so that he can put his belongings inside and have them safe. Most of the living quarters here are dirty. The cleaning of halls, toilets, and public rooms, is done by concessionaires, who also live in these buildings. For those unmarried workers who do not want to live in such dirty surroundings, there are a few cleaner establishments down nearer the center of the town.

In this and other mining towns there

are special problems facing the companies with regard to their workers' housing. First of all is the problem of cleanliness and sanitation. In the case of Sewell, the workers who are particularly dirty are given warning and are cautioned to keep their places clean. If they do not respond to this they are given several other warnings, and if these do no good, they are moved to a block of flats reserved specially for the dirtier families.[8]

Another problem is that of overcrowding. This is particularly severe in the coal-mining camps. The Schwager Coal Company made a survey of housing conditions in its Coronel mining camp and found that there were as many as twelve people living in one-room apartments.[9] In part this arises from the tendency of many Chilean workers to have living with them many "agregados." These agregados may be either relatives, or they may have no connection with the family—they may be orphans of friends, or just strays. The housing under one roof of very large families of uncertain blood and legal relationship is characteristic of the country, and perhaps is a reflection of the stage of development of the industrial revolution in Chile.

Manufacturing employers, too, have had to build houses. In many cases, when they built their plants outside of the main centers of population, they had to build houses before they could get a working force. In many other cases they found that, in order to maintain a high morale and to get the kind of workers they desired, it was profitable to build houses for them. Others were goaded by the 1943 housing law, which penalized those employers who did not build houses for their employees.

This writer visited a large number of housing projects built by private manufacturers, including those of the Paper Manufacturing Company of Puente Alto, the sugar refinery at Penco, the W. R. Grace & Company textile plant in Chiguayante, the Fundicion Libertad metallurgical plant in Santiago; the Cia. de Paños de Concepcion, a woolen products company in that city; the Yarur cotton textile plant and the Vestex ready-made clothing plant in Santiago, the Kunstmann flour mill in Valdivia and the Fanaloza ceramics factory in Penco. The projects listed vary in their geographical location, in size and in age and are a fairly good example of housing by manufacturers in Chile.

The two best developments in this number are those in Puente Alto and the Penco sugar refinery. The Puente Alto development is built on a large tract of land near the factory, which is big enough so that each worker can have not only his individual house but a small plot of land in back and a yard in front. On these back plots most of the workers have gardens and chickens. The houses have a living-dining room, two or three bedrooms, a kitchen, and a bathroom with running water and toilet facilities.

In the housing project of the Penco sugar refinery most of the houses are duplexes, with two connected houses side by side. They have small yards in front and in back, and the houses are much more distinctive than usual in employer-housing projects, each house having a character of its own, instead of being one of many in a barracks-like row, as is so often the case. Both in the Penco and the Puente Alto developments the companies have people who keep an eye on the houses to see that they are not allowed to run down.

There are other good developments, the Chiguayante, for instance. Some of

[8] Interview with Enrique Rojas Gallardo, Inspector of Houses of Braden Copper Co., in Sewell, Chile, February 28, 1947.

[9] Interview with Arturo Pardow, Sub-administrator and Chief of Welfare, Cia. Carbonifera y de Fundicion Schwager, in Coronel, Chile, February 20, 1947.

the houses there are duplexes, but most are in long blocks, one house more or less like its neighbor, and there are some apartment houses of three or four stories. These houses, too, are looked after by the company. The white collar workers have individual houses, bigger or smaller according to the importance of the employe. They are for the most part segregated from the houses of the manual workers, in contrast to the situation in Penco where the refinery has white collar workers, executives and manual workers living together in the same development.

Fundicion Libertad had just started to build when this writer was in Chile early in 1947. The company had been spurred to this activity by the Law of 1943. So far it had built only a few houses near the factory for white collar workers.

The Cia. de Paños de Concepcion had the beginnings of a very pleasant development when this writer visited it. They have a considerable tract of land and were building the first houses on that land early in 1947. Eventually they hope to have a whole housing development, complete with greensward in the middle, with stores and other local civic institutions. To begin with, they built several long rows of houses, semi-detached brick dwellings of two stories each.

The Yarur project is a mammoth affair which is estimated to have cost more than ten million pesos. It is a regular little city, with all of its own conveniences and needs. It was being completed when this writer was in Chile, and was located near a government housing project on the outskirts of Santiago. The Vestex development also was being built near a government project, the Juan Antonio Rios Houses. This clothing company's development consists of about forty family units, in the form of apartment buildings.

The Kunstmann project in Valdivia was one of the worst housing developments the author saw in Chile. The buildings there are almost more huts than houses. They are on a very cramped piece of ground, which has been filled up with all of the buildings it could possibly contain. These are of rudimentary wooden or tin construction, have few conveniences, and are not very inviting.

Finally, the Fenaloza project was a modest one in 1947 and is in the form of apartment buildings. It was started only early in the year 1946, in part at least as a result of the government's housing efforts.

Various of the employers have said that they have trouble teaching the people to live in the houses which are provided for them. The living standards of the average Chilean agricultural worker are distressingly low. More likely than not he has no sanitary facilities, his floor is of dirt, his windows are broken or never existed, his home is one big draft, made of chucked-together bunches of wood, adobe bricks, or perhaps, if he is really elegant, real bricks. The change when a worker moves into a house where he has toilets, hot and cold running water (or at least running water), good wooden floors, well-built buildings, is something to which it takes time to become accustomed.

The average Chilean worker, furthermore, is not in the habit of keeping his house clean, so at first there is a tendency for the new houses which the companies give them to become almost as dirty as those which they left. However, there is a growing tendency for the workers to keep their houses in good condition.

The housing efforts of private enterprise are by no means sufficient to cope with the great lack of dwellings in Chile. The government has taken a number of steps to meet the situation. Through the Caja de la Habitacion Popular, the

national government has itself sought to build houses for those in need. And, through the semi-autonomous social security funds, it has sought to stimulate the building of houses through the extension of loans to members of the funds.

Workers' housing was perhaps the first field of social legislation in which the Chilean government took an interest. It is said that the first workers' houses were built by the government in 1853.[10] However, it was not until 1906 that the Chilean congress passed really important legislation to aid the construction of cheap housing. Regional housing councils were established by this law, with power to condemn housing which was unhygienic and to either order such buildings repaired, or to order them destroyed. Fines were provided for those not carrying out the orders.

The Law of 1906 provided aid for those who constructed new and healthful houses. Such individuals were to be assured 100 liters of drinking water a day at one-tenth the ordinary price for twenty-five years. The municipal government would pave the street in front of such houses, and connect them with sewers if any existed nearby. And the Mortgage Credit Fund (Caja de Credito Hipotecario) was empowered to lend up to 75% of the money needed to build such houses.[11]

During the dozen years after the passage of the 1906 law, there were only some 3,039 houses with 8,207 rooms constructed, all of which were in Santiago.[12] It was not until 1925 that a new law was passed to deal with the housing problem. During the next eleven years various experiments were made in this direction, and finally in 1936 the Caja de la Habitacion Popular (Popular Housing Fund) was established. The main burden of government housing efforts in behalf of the underprivileged has been in its hands since.[13]

The Caja de la Habitacion Popular was given various sources of income, including an annual state appropriation, funds from the Caja de Seguro Obligatior, the proceeds of a government bond issue, money from the National Savings Fund, income from investments and 25% of the return from taxes on incomes from real estate.[14]

However, the resources of the Caja were insufficient. The financial status of the institution was improved with the passage of Law No. 7600 of October 20, 1943, which provided a number of additional sources of income. The most important section was certainly that which provided that employers with profits of more than 50,000 pesos must pay 5% of their net profit to the Caja de la Habitacion Popular. They could be exempt from this contribution if they spent an equivalent amount of money on housing for their own workers.[15]

This provision of the Law of 1943 has certainly had a marked effect in stimulating employers to establish housing projects for their workers. Most employers in Chile have an ingrained distrust of turning over any more money than they have to to the government, and so many have preferred to construct houses themselves rather than to give the money to the state for the purpose. Some of the employers of Santiago, who have not desired to establish individual housing projects, got together to jointly

[10] Edmundo Montecinos Rozas, *Apuntaciones para el Estudio de la Evolucion de los Partidos Politicos Chilenos y de su Proyeccion Juridica* (Santiago de Chile: 1942), p. 73.

[11] Armeliano Bobadilla Saenz, *Habitaciones Para Obreros—Ley de 20 de Febrero de 1906* (Santiago: Imprenta Barcelona, 1907), pp. 20-34.

[12] J. Horacio Mujica Salamanca, *Habitaciones Para Obreros—Estado de las Leyes, Reglamentos y Proyectos* (Santiago: Imprenta Illustracion, 1920), pp. 16-17.

[13] Luis F. Luengo Escalona, *op. cit.*, pp. 72-76.

[14] *Ibid.*, p. 76.

[15] *Ibid.*, pp. 103, 105.

develop a large workers' housing project on the outskirts of the city.[16]

The Caja de la Habitacion Popular is a semi-autonomous organization, the titular head of which is the Minister of Labor, but which is really presided over by an Executive Vice President. The Council of the organization is appointed by the President of the Republic, but is made up of individuals chosen to represent various groups in the population. The Director General of Labor is a member ex-officio. The technicians directly interested in housing are represented by members of the Institute of Engineers and the College of Architects. Members of the Manufacturers' Association, the Agricultural Society and the Mining Society are appointed to represent the employers' interests. Trade union leaders, one selected to represent the manual workers and another to speak for the white-collar workers, are appointed in representation of labor. Workers' housing cooperatives, mutual benefit societies, and tenant associations are all represented on the Caja's council. Finally, one member is officially "representative of the President of the Republic," though in fact, of course, all are appointed by the Chief Executive.[17]

This Council is very active and delves into all kinds of subjects such as the style of architecture to be used, whether a window should be one size or another in a house, the color the homes in a certain development should be painted.

The law provides that the houses which the Fund builds can be occupied only by those who earn less than two and a half times the white collar workers' legal minimum wage, and the size of the houses is also limited. About sixty percent of those built by the Caja by 1947 were occupied by white collar workers, and forty percent by manual workers. About eighty-five percent of the buildings constructed by the Caja up to that time were individual houses, and only a limited number were apartment buildings.

The houses can be built either by the Caja itself, as is true in most cases, or by loans to individuals, to industries or to unions. By early 1947 there had been only three unions which had applied for loans to construct housing developments. The plans for housing developments built for unions or for employers are drawn up by the Caja and submitted to the party involved, and if they have any suggestions to make, the Caja considers them, and uses them if it can. In the case of projects which are built by individual employers with the five percent of their profits which would otherwise go to the Caja, the fund has a say as to the kinds of buildings constructed, the materials used, etc.

The houses of the Caja are utilitarian first of all. They are made from products of the area in which they're built, and according to the conditions in which they're located. Practically all of the houses and apartments have toilet and water facilities in the house or apartment itself, although showers are more general than bathtubs. However, few have central heating since the Caja believes this unnecessary in most of Chile. In the more southerly climes, the houses have a big central room with good heating facilities.

Some of the Caja's houses are built to be rented. Others are intended for ultimate sale to their occupants. In the case of those which are sold a worker first rents the building for two years, after which he may be able to apply to purchase it. The Caja employs social workers to visit prospective purchasers to find how they keep up the house, the family's

[16] Interview with Alejandro Horst, Manager of Imprenta y Litografo Universo, in Santiago, March 31, 1947.

[17] *Seis Anos de Labor, 1939-1945, op. cit.*, p. 12.

financial resources and probity. If the report is favorable, a contract is signed for a thirty to thirty-five year period of amortization, and the family gets title to the house.

It has been found that there is a tendency for workers who buy the Caja's houses to resell them. In one study made five or six years after one of the Caja's developments had been sold to its occupants, it was found that only about one third of the original occupants were still in possession of the houses. The Caja does not like this tendency and as a result emphasis has shifted in recent years to building houses for rent. Early in 1947 sixty percent of those being built by the Caja were still being constructed for sale, but the proportion was declining.

The Caja has a few complete housing settlements, with stores, schools and all the other buildings necessary for a community. In the case of schools, the Caja usually builds them as part of the settlement and then is reimbursed by the Sociedad de Constructores de Escuelas, the government agency entrusted with that job. Some of the housing projects have social centers as well.[18]

During the first nine years of its activity, the Caja had constructed 7,341 houses and 104 commercial locations. It claimed that by 1944 its costs of production were 41.3% less than those of commercial builders.[19] One frequently hears complaints in Chile about the red tape and high administrative costs of the Caja. There may be some truth in these charges, but it must also be said that the Caja is doing a good deal to relieve the housing shortage in Chile.

The country's various social security funds are also doing much to provide housing for the workers of Chile. The "shoestring republic" doesn't have any unified social security system, but rather has a number of individual funds, covering particular classes of workers, and with various types of benefits. Some of these make it possible for the workers covered by the fund to get loans for the construction of houses.

One of the most important of these funds is the Caja de Prevision de Empleados Particulares (White Collar Workers Insurance Fund), which covers most white collar workers in private employment. One of the principal functions of this Caja is the lending of money to its members for the purpose of purchasing homes. It used to be the policy of the Caja to lend money to buy houses already constructed, but now it will advance funds only for the building of new houses, because the Caja has no interest in moving people about from one edifice to another, but rather seeks to help clear up the housing shortage.

The applicant must have been a contributor to the Caja for at least three years, and if he gets the loan it is on a thirty-year amortization basis. The demand for loans is very large. The Caja spends a great deal of time studying the cases of the individuals applying for loans, drawing up plans for the buildings, and seeing that the interests of both the individual home builder and the Caja are well protected. As a result there is considerable delay in granting loans.

The Caja has a very close check on the building of edifices for which it advances money. It draws up the plans in consultation with the person to whom the loan is to be given, then during the construction period it keeps a close watch on the building operations to see that the contractors are using the specified material of the correct quality, etc. The

[18] Interview with Jose Pistarno, Executive Vice President, Caja de la Habitacion in Santiago, March 12, 1947.

[19] *El Problema de la Habitacion en Chile, op. cit.*, p. 40.

contractors send their bills to the Caja.[20] By the beginning of 1945 the Caja de Empleados Particulares had invested nearly $40,000,000 U. S. in housing projects for its members.[21]

Another important social security fund, the Caja de Empleados Publicos y Periodistas, covering public employees, journalists and lawyers, has also done a good deal to help its people to build their own homes. The Caja has built about ten thousand houses for its members. Some of these houses are built in projects completely constructed by the Caja. There are several such developments, including a three hundred-house community in Santiago. But many more of the houses are built with loans made directly to the members who build where they desire. Of course, the community projects are cheaper, but many members of the Fund don't particularly desire to live in such developments.

In 1947 there were about six to seven thousand applications on file for houses, and only about one thousand a year were being constructed. Preference is given to employees on the basis of length of service and number of dependents, the latter counting five points each and years of service one point each. A minimum membership in the Caja of three years is necessary in order to apply for a loan.

The plans for the houses must be approved by the Caja, although they can be drawn up originally by the applicant for the loan. This Caja also is careful to see to it that the actual contractors keep up to the specifications in all buildings constructed under the authorization of the Fund.[22]

Another important factor in the workers' housing picture in Chile is the Caja de Prevision Ferroviaria, covering the workers on the state railroads. By 1947 this Fund had advanced loans for the construction of ten thousand homes, and it had proposed a program for the construction of 3500 a year until all the workers on the state railroads had homes of their own.[23] By 1945 it had invested more than one hundred forty-one million pesos in housing loans.[24]

There are numerous other social insurance funds which have done jobs of somewhat less importance in the field of workers' housing. The joint efforts of all of these Cajas are a considerable contribution to the solution of the problem.

Thus the problem of low-cost housing in Chile has been dealt with from a variety of angles. Realizing its importance in the process of developing a first-class industrial workforce, many employers have voluntarily done a good deal in the direction of workers' housing. Other employers have been induced to take steps in this direction by Law 7600 which provided for compulsory employer contributions to the Caja de Habitacion Popular but excused those employers who themselves built housing for their workers. On the other hand, the Caja itself has made a significant attack on the problem, by constructing a number of housing communities in various parts of the country. Finally, the various social security funds have done much to relieve the housing problem of particular groups of workers. In general, it can be said that the Chileans have shown considerable ingenuity in their handling of this problem.

[20] Interview with Jose Antonio Infante, Mannte, of Caja de Prevision de Empleados Particulares in Santiago, March 13, 1947.

[21] *Veinte Anos de Legislacion Social, op. cit.*, p. 228.

[22] Interview with Rene Santandreu, Secretary General of Caja de Empleados Publicos y Periodistas, in Santiago, March 14, 1947.

[23] Interview with Humberto Soto, President of Railroad Workers Federation, in Santiago, December 31, 1946.

[24] *Veinte Anos de Legislacion Social, op. cit.*, p. 228.

Land Economics Research†

By V. WEBSTER JOHNSON*

THE usefulness of research depends upon the extent that it is of assistance in dealing with or understanding problems. Its significance varies with time and space. For instance, at one time it was assumed to be normal for millions of people to die of starvation: this assumption can no longer be made complacently. Now the peoples of the world are asking such questions as: How can we effectively prevent starvation and undernourishment among all people? One significant aspect of such a practical problem involves purposeful research to supply facts and information needed in the formulation of land policies and programs, as for example, necessary types of group action for more and better food and the adoption of conservation programs for abundant production now and in the future; and potentialities of public measures for land development and land settlement, including consideration of needs, benefits, and costs—from the position of both the individual and the public. Another aspect of this problem, but distinct from the use of resources, is the impact of tenure or property arrangements in effecting the distribution of food and fibre products among the people of the world. In the struggle now going on as to the use, the ownership and the control of land resources, the conditions under which people or units of government hold rights to occupy, to use and to transfer land affect materially the use of land, its conservation and development, and the way in which it meets human needs.

† The suggestions of associates in the Division of Land Economics and others in the Department of Agriculture, as well as comments from several men in Land Grant Colleges, in the preparation of this paper are appreciated by the author.

This glimpse of the world in which we live indicates that the results of studies that deal with man-to-man relationships in the economics of the use of major types of land, and the extent to which property or rights in land and other institutional forces condition land use, would supply currently needed information and facts for charting the course ahead of us. Research in the economics of the use and control of land is related directly to the solution of practical everyday problems. On the domestic front, the main land problems following World War I arising out of the land boom and its aftermath, the over-extension of settlement into marginal agricultural areas, and an excessive amount of soil, forest and range exploitation could have been dealt with more effectively if the results of fundamental research studies had been available. New problems and new situations arising from World War II are now upon us. Before considering some of these current problems in rural land economics, let's first look at basic data needs.

Basic Data

In land economics, adequate and reliable data, and their classification into meaningful groups, are fundamental. Available statistical data on major land uses and the condition of land resources, including land outside farms and shifts of land into and out of farming, are altogether too limited. We need to know more about land in farms; the extent of land development by clearing, drainage and irrigation; and the status of resources in terms of their productivity. Better information is needed also on who owns the

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land, how acquired, and on existing tenure patterns. These are big jobs and they are far from adequately covered by the present census type of data. To obtain this information it must be gathered from farms and at times from sources other than farms and farm families.

By proper sampling procedure and use of special surveys in conjunction with improved census enumerations, much valuable and needed data could be collected—data which would be very useful in the analysis of land problems. However, over-all types of data cannot replace intensive investigations of problems in specific areas, but do provide a valuable and significant framework for detailed studies. A more substantial under-pinning of basic information makes for a better understanding of relationships between people arising out of the use of land. Many times studies are undertaken without a clear picture of those factors, characteristics, and forces that are crucial to a determination of strategic issues in defining research problems.

Land Utilization

The economics of land utilization involves analyses of relationships arising from shifts and trends in land uses and study of land-use adjustment problems. Emphasis is on the utilization of major classes of land, i.e., agricultural, forest, grazing, recreational, mineral resources, water resources, and urban land. The unit of investigation is often an area rather than the individual operating units. Among the factors to be considered are present and potential requirements for land of different uses, income yielding capacity of land, individual and social costs and benefits arising from utilization, and the operational effects of land policies and programs, which provide the "modus operandi" for adjustment toward the efficient use of land resources.

Public Interests. Land-use studies must give full consideration to present and long-run interest of people. In this regard it is not enough to be content with the maximum efficient use of resources. In an article entitled "Models in Farm Production Economics Research," Heady makes this statement: "The conditions necessary for maximization of profits by the individual business in a competitive environment are also those necessary for an optimum use of society's resources. The pricing and profits system becomes a common vehicle through which these two entities can arrive at mutually consistent solutions."[1] It is pointed out in a footnote that numerous qualifications must be made to this statement. Without in any way reflecting upon Mr. Heady's excellent article, the question might well be raised: Do not numerous qualifications to a basic statement impair the validity of such a statement when these qualifications are major? For a number of reasons maximization of profits by individual land users may not result in the greatest public interest. High among these reasons is that the individual and society have different time preferences in regard to the use and conservation of land resources. And even in a freely competitive society, which we do not have, it is not always possible "to fashion means by which the interests of the individual can be made compatible with the interests of society in the use of resources." The reason is that the values to the public arising from the utilization of land are not identical to the exchange or market values that accrue to individuals by following practices that maximize private gains.

Economic competition will not and cannot itself always direct land into uses

[1] Earl O. Heady, "Elementary Models in Farm Production Economics Research," *Journal of Farm Economics*, May 1948.

most beneficial from the standpoint of society. "We once tried to 'let the crops fight it out! Corn vs. oats; potatoes vs. pine; pine vs. popple,' on the theory that 'whatever finally paid most or best should have the land and economic right of way,' but forests disappeared and were not replenished . . . Hence the need for planning, . . . and social controls over land uses."[2] The question is, "Is a private purpose also a public purpose, or merely a private purpose? Will the behavior of the persons benefited prove to be in the direction of that benefit, also a public benefit?"[3]

Economic Land Classification. Important in land utilization studies is an economic grouping or classification of land. It is an essential step in delineating problems, as aid in analyzing data, one means of pointing to land situations in need of some course of planned action, and a step in arriving at sound programs in keeping with the potentials of land. Land classifications differ for different purposes and, obviously, are modified by time. Properly used, however, they can be an effective educational device as well as a needed tool in the study of problems or in the administration of land programs.

Research directed specifically at economic land classification should be on those studies that deal with classification as a tool or means to ends sought and not as an end in itself. Techniques and methods most appropriate in a determination of economic land classes form the core of needed research. It is not the job of research to spend a lot of time actually making classifications per se.

Area Studies. In marginal agricultural areas where farm settlement is intermingled with large areas of scattered forest lands, agriculture persists at a low-income level. The forest lands are generally in many ownerships and are given inadequate management or no management at all. In the past, tax delinquency has been high in these areas; likewise, local government costly with quality of service low. Similar types of situations are to be found in other fringe areas where transference of use and instability of use are problems.

The principal objective of this type of research should be to study problems—maladjustments in human relations arising from land situations—rather than investigations in terms of the geography or of "all the available data" of an area. In the process of analysis, economic measurements of land incomes under different intensities of use are, of course, essential; but also, of equal significance in the measurement of the economic well-being of people are conditions of living, nature and character of local public services, settlement pattern, and the burden of government costs on land. For instance, tax delinquency is often an effective measure of the ill adaptation of man's relations to land. Obviously, the type of data assembled and analyzed will be determined, in any particular study, by the problem under investigation. The analysis of man-land problems often involves functional relationships that call for group type of measurement.

Most readers are familiar with area studies undertaken in the cut-over section of the Great Lake States, in the Appalachian Region, the Great Plains and in many so-called "problem areas" in different parts of the United States. The work of Dr. Wehrwein and others in Wisconsin is well known. This work was directed toward a need for counties to take tax title to delinquent land, block it up for forestry and recreational land

[2] Richard T. Ely and George S. Wehrwein, *Land Economics* (The Macmillan Company, 1940), pp. 140.

[3] John R. Commons, *Legal Foundations of Capitalism* (New York: The Macmillan Company, 1924,), pp. 326-27.

uses and zone it against agricultural use and year-round settlement. The results of this research led directly to the rural zoning movement in Wisconsin and greatly implemented the county forestry program. The effective use of research results of this type is revealed also in a study of economic and social problems of the Southern Applachians. Gray and Clayton write: "The end product . . . lies beyond such results as might be anticipated merely by placing the informational and analytical data of the study in the hands of informed persons, with the expectation that through them it would ultimately be made available to the people of the region and that actions taken by such persons and by various local administrative agencies would cause appropriate adjustments to be worked out."[4] This study was widely used during the early years of the Tennessee Valley Authority.

Research needs to be undertaken to see what has been happening in past problem areas and to study emerging problems. Prosperity dims one's vision beyond the immediate present.

Many other worthwhile area studies could be suggested. For instance, in the Great Plains a need exists to explore institutional arrangements that would embed more of the costs of climatic risk and uncertainty into the land factor.[5] "Great Plains problems, insofar as an adapted agriculture is concerned, are primarily land economic . . . because institutional and area factors governing the utilization of land in this semiarid climate such as credit and taxation policies, precipitation, and environmental factors play a limiting role."[6] Land use policies are strategic in the Great Plains.

Land use patterns, institutions, property and group organizations as causal forces in the economy of an area are particularly important, and involve careful, integrated analysis.

Conservation

The subject of conservation is in the forefront of public attention. It involves several fields of work. As individuals and as a Nation, we are concerned with the conservation and development of land resources. Our attention is directed to the economic aspects of land conservation.

Expenditures for conservation by individuals must, to a large degree, be in terms of their profitableness; but it is also true that individuals in whose care land is placed need a changed social philosophy that recognizes to a greater degree than at present a public trust in land. Man's pecuniary interests should not solely predominate in the use of land—and which, in fact, are often dissipated through capitalization into land values. If maximum dollar-and-cent production of each unit of land is reflected in high land values, what course is there but to rely on land exploitation, and "miracle crops, miracle fertilizers, and miracle chemicals" to solve arising predicaments!

Conservation interests are broad and involve values beyond the interests of individuals. In appraising conservation benefits, it is important to distinguish clearly, as far as possible, between those interests that are or should be individual in character and those that are or should be public interests. For instance, the prevention of erosion on a farm, to the extent that this is profitable to a farmer, is basically an individual interest and a problem of good farm management. If

[4] *Economic and Social Problems and Conditions of the Southern Appalachians*, U. S. Department of Agriculture Misc. Pub. 205.

[5] T. W. Schultz, *Agriculture in an Unstable Economy* (New York and London: McGraw-Hill, 1945) p. 41.

[6] R. R. Renne, comment in review of *Winter Wheat in the Golden Belt of Kansas*, by James C. Malin, appearing in *Journal of Land & Public Utility Economics*, February 1945, p. 86.

so, the task to a large degree is one of education and, through demonstration, to show the farmers the "why" and the "how" of good conservation practices, assuring productive units that are adequate for efficient operations and the existence of credit and other means to facilitate needed resource adjustments. The evaluation process of determining benefits over costs is little different from determining the profitableness of building a new barn. The problem is one of appraising benefits over a period of years from a capital improvement.

In this area of conservation, research is lacking on difficulties of following conservation practices because of inadequate operating units, institutional barriers, poor tenure relationships, insufficient capital requirements and the place of incentive payments, and inducements and administrative devices in obtaining farm participation in conservation programs. In view of the large amount of money that is going into conservation activities, more work in this area of research is needed.

It should be obvious that conservation benefits that accrue to individual firms are also totally or partially public in character, depending upon the nature of the benefits that arise. However, differences do exist between private and public conservation values that need to be pointed out and that are important in research considerations. For example, a significant aspect of conservation farming is the difference between private and public evaluation of conservation benefits. Study needs to be made of the extent to which benefits accrue to the public beyond those to farm owners and operators. These include such public benefits as reductions in downstream flood and sediment damage and prevention of adverse impacts on the communities. In addition, society places a higher present value than does the individual on the future benefits. This may arise out of differences in the rate of discount of benefits and costs, differences in risk, and other differences in outlook such as the value from maintaining a high level of production and conserving fertility for future use.

In appraising public expenditures for conservation to the extent that benefits in relation to costs can be measured quantitatively, this should be done, but it is very difficult and often impossible. However, as decisions can often be made in terms of choice among alternatives, absolute measures of value in any situation are of less importance than relatively accurate and comparable appraisals between alternative choices. The problem is one of getting the best possible quantitative measurements, expressed in dollars or other units, and supplemented by qualitative information on resulting social net income so as to narrow as far as possible the area of judgment valuation.

Economic analysis of conservation problems must rest upon the use of sound methods and procedures; a thorough analysis of benefits and costs between public and private interests and among the various beneficiaries, and should be framed as a part of a comprehensive policy for the wise use of all our land resources. To give concreteness to the importance of this field of research, one need but recall the mammoth development programs that are now taking place in river basins. In the Missouri Valley alone the proposed program involves some eight or ten billion dollars or more than the present value of the farm land, buildings, and livestock. The economists' responsibilities are great and inescapable.

Water Problems

Water is an unique economic good and special situations surround its use. Many

problems associated with water cannot be effectively dealt with by single farmers or individuals but require group action through local, state or federal governments and through types of corporate organizations. Water problems are influenced by custom, tradition, laws, organizations and institutions.

Problems are present in supplying water to dry lands, in removing excess water from wet lands, and in protecting lands from overflow and flooding. They are problems that call for cooperation and well-planned land and water programs in the development, settlement, or shifts in land uses. Many of them stem from the increasing attention being given to the control and development of land and water resources in river basins as, for instance, in Missouri, Columbia, and Colorado.

Land economists are interested in: (1) the scope and nature of present flood areas, characteristics of land to be inundated, and farm displacement and land development problems; (2) area analyses of land and water resources involving public and private costs and benefits arising from development programs; (3) how water can be used most effectively in stabilizing the economy of an area; that is, in the integrated use of irrigated lands with other lands; (4) what farm operators can pay for the use of water under different circumstances; (5) how much of the costs of irrigation projects should be charged to indirect or social benefits and thus be borne as a public charge; and (6) the ownership rights in water and their distribution.

Land development through irrigation, drainage, and flood protection should represent a national investment in land resources and should in part offset losses of land resources through erosion and misuse of land. Potential development areas also should be considered as a reserve against possible greater future land demands. The interests of individuals, regions, and the Nation need to be considered in studies of the economics of water utilization.

Value and Valuation

Since land economics is concerned with the use, conservation and improvements of land resources, valuation is an essential part of the field. This is true in regard to land market considerations and in the valuation of development projects. Problems that arise in connection with shifts in land uses, the extent to which public funds should be used for land development and improvement purposes, and the sharing of such costs between individuals and the public call for economic evaluation. Because of abundant resources and ability to withstand waste and extravagance, we have not always adequately understood or appreciated this need.

Development of additional techniques and useful methods of appraising the value of different pieces of property for purposes of purchase or sale, extension of credit, taxation, and benefits and damages from public improvements are necessary. When the emphasis in research is on the movement and composition of land values, both geographically and chronologically, the approach draws heavily upon actual sales, estimates of land value levels, method of financing, types of buyers and sellers, the reasons for buying and selling, and upon a theory of value, with the subjects of rent, interest, and capitalization of primary significance. In addition, many elements not satisfactorily reflected in income have a definite effect on values and may be measured by relating estimated or actual sales prices to such variables. For instance, type of roads, nature of buildings, farm lay-out, distance from market and

community aspects affect land values but are not adequately measured in income.

Consideration of warranted land value levels takes the form of looking ahead to probable consequences of the relationship between selling prices prevailing at any given time and expected land incomes over an extended future period. It is in part a task of having the best possible picture of prevailing land prices and the factors operating in the land market but also involves taking account of economic and social consequences of forces operating in the whole economy. On the basis of assumed conditions, it is possible to project different levels of farm incomes and to set up reasonable standards of living; then, through estimates of the part of land income socially justifiable for capitalization into land values, determinations can be made of levels of land values warranted under different situations. The effect of a high-value structure in relation to earnings on reduced living standards, increased tenancy, frequency of foreclosures, soil depletion and other results that may have serious economic and social implications, constitute a part of the problem.

In this setting, the existing level of land values might well be studied in relation to what might happen in an adjustment period of declining prices with farmers having high fixed costs in operating equipment. Farming is a big business and to maintain and provide for expensive machinery with reduced incomes may have serious impacts on the ability of many farmers to carry their debt load.

Another problem in need of study is the capitalization of allotments and benefit payments into land values. Various forms of public action, such as acreage allotments, grazing rights and milk-shed permits, have often been assigned directly to individual farms. Among the many consequences of this process is the effect on the value of farm real estate. To the extent that expected future incomes from benefits of this kind become capitalized into higher land values, they accrue to present landowners rather than as continuing benefits to farm operators. Subsequent land purchasers then must pay for these benefits in the form of high land prices and consequently future benefit payments no longer become benefits.

Tobacco acreage allotments is a striking example. Since 1934 the benefits to tobacco producers under production adjustment programs have hinged upon the assignment of tobacco acreage allotments to individual farms. The allotments have served as a basis for (1) computing payments under agricultural adjustment or conservation programs, (2) computing parity payments, and (3) calculating penalties under the marketing quota program. Moreover, production from allotment acreages has received preferential treatment under commodity loan programs. The question might be raised as to what extent are these allotments and benefits being capitalized into land values? It is a difficult problem, but studies in this field should be able to make a substantial contribution to the agricultural economy by presenting information of real significance to policy formulation.

Land Tenure

Land tenure is concerned primarily with conditions affecting the distribution of control over the utilization of land among members or groups in a society and the consequent effects of control patterns upon the economic and social welfare of members, both individually and collectively. Land tenure brings to mind the concept property. Property or rights in land is the core of tenure arrangements. As is well known, tenure involves, for instance, many types of man-

to-man relationships arising from the ownership and leasing of individual farms, stemming from government land policies, and springing from regulatory controls that impinge on the use of private land.

Most of our land policies are realized through ownership, through leasing arrangements, by the exercise of the police power, by the use of the power of taxation, through eminent domain proceedings, and by special types of inducements arising from the spending power. To the extent that land policies—rural zoning, grazing control devices, soil conservation districts, or any similar types of directional measure—affect the use of private lands, and also to the degree that administrative orders or regulations of public land involve modifying or sharing rights in land, the disposal, the management, and the development of such lands have their bases in policies that express an accepted concept of property in land.

Land tenure may be grouped broadly into two classes: (1) private tenure and (2) public tenure. Private tenure research may be divided into problems dealing with land ownership and with problems concerned with land tenancy. Public tenure research deals essentially with landlord-tenant relations in which government is the landlord or where government directly affects rights in private land through special measures.

Land Ownership. Individual ownership and operation of family farms has long been an objective of American land policy. The Homestead Act and various government-sponsored credit programs of more recent times have implemented this policy. At times conflicts in purposes seem to have been written into legislation; yet, as an ideal and as something sought, it aims nearer to a consistent land policy goal than anything in our history.

A strong case can be made that owner-operatorship is conducive to effective land use, efficient production, improved social well-being, and stability of agriculture. Thus, we need to know more about the processes by which farmer ownership is acquired and the hindrances to the acquisition of adequate operating units. Many problems arise in the process of farm acquisition. Information is inadequate in regard to practices used and the experiences of present owners in acquiring their farms. The influences of institutional and non-economic factors on farm acquisition have not been adequately analyzed. The importance of savings, credit and inheritance in obtaining ownership needs further study. Some significant questions are: (1) What influence does the business cycle have on the ability of farmers to acquire ownership? (2) What steps do farmers take in preparation for ownership? (3) How and where is the initial capital acquired to obtain ownership? (4) How important is nonfarm employment in the accumulation of capital with which to purchase a farm? (5) How important are inheritance, gifts, and intra-family arrangements in the ownership process? (6) What have we learned from the experiences of government-action programs, such as the Farmers Home Administration?

Land Tenancy. In view of the rapid changes in farming, a present problem is the type of rental agreement needed by landlord and tenant to deal with situations that have arisen from changes in methods of production and types of enterprise. The widespread adoption of mechanical power and equipment, the increased attention given to new types of farming, such as livestock and specialty crops, and changes in technology and efficiency of farms, make adjustments in rental agreements necessary. Changes

are necessary both as a matter of equitableness and as inducements or as a part of the process in making desirable farm adjustments. The renting of land is a big business, involving annually about 3.2 billion dollars in rents paid landlords. Rental arrangements that are in the interest of both tenants and landlords are essential to a sound and prosperous agriculture.

Often one of the reasons for inefficient farm operations and dissatisfactions on the part of both landlords and tenants is the existence of unsatisfactory tenure relationships. A distinct phase of this problem falls within the field of tenure. In the interest of improved relationships between landlords and tenants, decreased turnover in tenants, a higher level of rural living, conservation of land resources, and increased farm incomes, much could be accomplished through better landlord-tenant working relations. Many times small inducements, concessions, and expressions of interest between landlords and tenants will do the job. In an industry like agriculture, with several million farms, the art of doing things and type of relationships between landlords and tenants often have more significance in the productive process and in making for a better agricultural life than emphasis on technological advances.

Land Policy

Land policies have their roots in the philosophies and actions of society in the acquisition, the ownership, the disposal and the control of land resources. Because of their special nature they are considered separately from the over-all field of land tenure. Studies of land policies deal with situations where there has been accord or conflict of interests in policies, how far intentions have been reflected in results, and the relationships and consequences that have arisen or are likely to arise in certain situations from different kinds of land policies.

Studies in land policies may be organized from at least four approaches. Investigations may proceed from the viewpoint of laws, uses of government powers, and devices and instrumentalities employed in developing and effectuating public policies. The contribution through study of laws or statutes would be the organization of a systematic body of knowledge about the legal foundations of land policies. This job should be more than a compilation—rather, it should be an analytical compendium of the administrative basis of land policies in different situations. It should be somewhat similar to that of basic statistics in economic research. A second approach would be to organize the investigations around some more or less established public policy such as family farms, soil conservation, or aids to reclaim land. For instance, one could trace the history and fate of the family farm as an avowed idea in acts of Congress, expressed or implied, and as negated in other public acts. Third, a project might be approached by studying one specific type of measure such as rural zoning, grazing associations or soil conservation districts, its objective being first to get a good working knowledge of the nature and character of the device under study and then in selected areas investigate actual experiences with the device or its place in a land program. A fourth approach might be to look at a horizontal cross-section of the field in a selected area. Such a project would involve a description and analysis of laws, political institutions, administrative decisions, environmental factors and operator's practices and traditions, as related to land. The purpose would be to ascertain what the land policies have been, what they have been calculated to achieve, what experience

has demonstrated and also to supply information for improvements or alternative considerations.

Illustrative of the fourth approach is a project entitled "An Economic Analysis of the Tenure Relationships and the Management Policies of Public Land Administrators Relative to the Stability of the Range Livestock Economy, the Permanence of the Grass and Soil Resources and the Utilization of Western Agricultural and Grazing Lands" proposed by the Western Research Council.[7] This project has as its objectives:

"(1) To describe the tenure relations found to exist between the users and the owners of western public grazing lands in terms of stability of expectations of the users, freedom of action on the part of the owner to protect his resources against waste and damage, level of charges for the use of the resource, and methods of negotiation and arbitration between users and owners; (2) to describe the attitudes of users and of administrators, recreationists, irrigators and other interested parties towards the methods used and goals envisioned by the public land administrators; (3) to analyze the relative economic importance of alternative uses and combinations of uses of public lands of different kinds in different locations and under different forms of administrative control; (4) to analyze the economic aspects of differing kinds of current administrative control of public lands with respect to: (a) the economic position of the user, (b) the utilization of associated nonpublic lands, (c) the methods of fee determination and their economic implications, (d) the extent and magnitude of capitalization of public land grazing privileges and the extent to which they are sold in conjuntion with associated private lands, livestock or on the open market unattached to other property, and (e) the extent of the effect of public grazing land management and use on the values and use of associated private owned lands."

Obviously, such an area of investigation would involve many field studies, and of an integrated nature. In addition to knowing the legislative and administrative framework of present programs, projects in sample areas would invoke the collection of data on nature of operating and ownership units, the integrated uses of public and private lands, existing land use patterns, use capabilities of different types of lands, leasing arrangements, management practices, and other similar information. One of the principal ends sought would be to improve on the stability of expectations with regard to both private and public interests. This type of project illustrates the complexity and interrelationship of many studies in the field of land policies.

In conclusion, I wish again to stress that land economics, perhaps to a greater degree than other phases of agricultural economics, is confronted with problems involving public interests. It is a task that must be shared with other fields of economics as well as with sociology, political science, psychology, and ethics. Research work in land economics directed toward achieving a more constructive use of our land involves not only an analysis of present and potential land resources, study of tenure arrangements, consideration of land value problems, a knowledge of land policies, but also must include an analysis of the processes by which desired ends are reached. The problems are often tough ones; and more needs to be known in the use of effective techniques of investigation and in the synthesis of data so that the results of research will make an even greater contribution to social advancement.

[7] The project outline was prepared by Maurice M. Kelso, Department of Agricultural Economics and Rural Sociology, Montana State College, for the Western Research Council.

Some Aspects of the Economic Theory of Forestry

By JOHN A. ZIVNUSKA*

FORESTED areas have for some years been one of the primary zones for work in land economics and land use planning. Such studies as well as most studies in the economics of forestry have been centered almost exclusively on the institutional aspects of the forest problem. Studies of tenure, ownership pattern, taxation, marketing, governmental costs, and so on, have done much to explain the nature of the forest problem and to indicate means of encouraging the development of sound forest practice. However, theoretical studies of the economic bases of forestry have been largely overlooked. It appears probable that such studies could be of substantial value in clarifying the problem with which we are attempting to deal and in developing a model within which to evaluate various plans and procedures. This paper is intended as a preliminary exploration of this field and as an indication of the type of problems which are involved.

I

In the United States recognition of a public interest in the maintenance of good forest conditions has led to the development of large public holdings of forest land. However, 75 percent of the total commercial forest land in the country remains in private ownership. Recent estimates of the U. S. Forest Service[1] indicate that, of the 461 million acres of commercial forest land in the United States, 30% are owned by 3,200,000 farm woodland owners, 27% by 1,000,000 owners of holdings of less than 5,000 acres, 7% by 3,200 owners of holdings of from 5,000 to 50,000 acres, 11% by 398 owners of holdings of over 50,000 acres, and the remaining 25% by various public agencies. This is essentially a competitive type of ownership pattern. The fact that public agencies which compete directly with private owners in the production and sale of timber represent the largest single holders, with a combined ownership of one-fourth of the forest land and more than 40% of the saw timber volume, introduces an institutional factor into the forest economy which is unique in the American industrial scene. This has significant effects both on the anticipations of entrepreneurs and on the formulation of forest policy.

However, the point to be stressed here is that, under existing institutions, primary reliance for the development of a sound forest economy on this vast privately-owned area is placed on forces of an essentially *laissez faire* nature. While the theories of monopoly, of bilateral monopoly, and of monopolistic and imperfect competition all are of value in understanding particular phases of the forest economy, the general economic theory of forestry can well be developed within the context of the theory of competition.

One of the basic assumptions of *laissez faire* economics is that the individual or group will normally attempt to select the course of action that will maximize present net worth in terms of money. This implies that, under existing institutions and with certain well-known minor exceptions, commercial forestry will be practiced to the extent that entrepreneurs

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[1] U. S. Forest Service, *The Management Status of Forest Lands in the United States*, Report 3 from a *Reappraisal of the Forest Situation, 1946.*

anticipate a return to resources and efforts devoted to forestry which will have a present net worth at least equal to that for equivalent expenditures in alternative fields of economic activity. The key to the forestry entrepreneur's action, then, is the same as that for other entrepreneurs: a comparison of anticipated production cost with anticipated sale price. Thus in overall conception the economic theory of forestry is in accord with orthodox theory. However, in its detailed development certain distinctive characteristics of forestry enterprises become of great significance in modifying the conclusions which may be drawn.

One of the most significant and distinctive characteristics of forestry is the extreme length of the production process. The production of forest trees is essentially a biological process the length of which is determined by a combination of the natural characteristics of the several species, the site on which the forest crop is grown, the requirements of the industrial uses to which the trees are to be put, and the intensity of the silvicultural treatment. In the majority of cases the production period of a forest tree falls within the range of 50 to 150 years, although in exceptional cases both longer and shorter production periods are found. This length of the production period, which is not approached by any other industrial or agricultural production process, is the basis of many of the characteristic problems of forestry enterprises.

A second significant characteristic of forestry lies in the fact that a productive forest is simultaneously the "factory" used in producing wood and a storehouse of marketable raw material. Thus a wood inventory many times larger than annual sales must be carried if production is to be maintained. According to studies of the U. S. Forest Service[2] the board-foot volume of the present inventory of timber on commercial forest lands is over thirty times larger than the annual cut. Assuming an active management and a proper distribution of age classes it is estimated that, to achieve sustained yield of forest products, a ratio of board foot volume of growing stock (inventory) to yield (annual production) approximating 23 to 1 on a national basis would be required. Regionally, this ratio would vary from about 17 to 1 in the South to 45 to 1 in the Rocky Mountain region.

Due to the length of the production period, additional resources and labor applied to forest production at the present time will not achieve their full expression in terms of the quantity of standing timber until after many decades. Conversely, if productive efforts applied to forestry are reduced the resulting effect on the quantity of standing timber will again require many years to develop fully. At the same time it is possible to achieve rapid adjustment in the quantity of timber actually offered in the market. Reservation price plays an important role in timber marketing. Although occasionally pathological or insect conditions may necessitate prompt cutting, it is ordinarily possible to hold old-growth timber on the stump over a fairly long period of years without substantial change in the stand, while with young-growth timber such as would be produced by forestry enterprises, withholding the timber from the market will usually result in both an increase in volume and an improvement in quality. Conversely, the characteristic high ratio of inventory to production makes it possible to offer on the market during a short period a volume very much larger than the production during that period.

[2] U. S. Forest Service, *Gaging the Timber Resource of the United States*, Report 1 from a *Reappraisal of the Forest Situation, 1946.*

Thus, these two characteristics of forestry combine to create an anomalous condition for a produced good in which the physical quantity of standing timber is subject to only slow change over a long period of time while the effective supply offered on the market is subject to pronounced short-period variation. The significance of these characteristics can be clearly illustrated by a consideration of the application of conventional competitive price theory in explaining stumpage value.

II

Stumpage value is the value of the timber as it stands uncut in the forest. The accepted methods of stumpage appraisal are forms of residual determination.[3] The usual conception of stumpage values has been concisely summarized by Steer[4] who states:

"The theoretical market value of standing timber is the residue left when the total cost of manufacturing and marketing the forest products fabricated therefrom plus a reasonable margin of profit is subtracted from the total price received from the sale of the manufactured forest products . . . Thus stumpage realization values, theoretically at least, fluctuate up or down directly as does the selling price of the product and inversely as the costs of logging, manufacturing, and merchandising."

While the use of a residual technique in appraisal does not necessarily involve such a theoretical justification, it is apparent in discussions of stumpage values that such values are considered to be economic residuals in nature. This is particularly apparent in the conception of differential stumpage values. For example, Chapman and Meyer[5] state: "As in the case of land rent, this stumpage value depends on the margin between the prices of the various qualities of products obtainable from the timber and the total operating costs and profits incidental to its removal and manufacture." Since timber, unlike land, is not indestructible, the conception is essentially that of a royalty rather than a rent.

During a period in which timber is treated as a mine, such a theoretical conception of stumpage appears wholly adequate. However, once it is recognized that timber can be a crop—that it is a material which can be produced through the application of economic effort—it becomes necessary to modify this conception to allow for the influence on value of production costs.

This problem has been recognized by Marquis,[6] who distinguishes between two types of timber, "virgin timber" which is "costless" and "produced timber" which is "the result of measurable cost." He then holds that these two types occupy different niches in the theory of value. "The value of virgin timber, like the value of agricultural land, is derived from the value of its products. . . . A different method of determining value is involved when stumpage is produced as a conscious effort . . . The value of the lumber produced is still the most important determinant of the demand for stumpage, but costs affect the supply of timber on the market, and through their influence on supply, the value of timber."

Accordingly, Marquis holds that the stumpage value of "virgin timber" is entirely product-price determined whereas

[3] For details of these procedures, see H. H. Chapman and Walter H. Meyer, *Forest Valuation* (New York: McGraw-Hill Book Co., 1947), pp. 361-471, and D. M. Matthews, *Management of American Forests* (New York: McGraw-Hill Book Co., 1935), pp. 275-336.

[4] Henry B. Steer, *Stumpage Prices of Privately Owned Timber in the United States*, U. S. Dept. Agric. Tech. Bul. 626, 1938, p. 8. It should be noted, however, that Steer places major emphasis on institutional factors in the actual determination of sale price, stating that "the relationship between the fair market stumpage value of many tracts of timber and the price for which they have been sold has, during the period covered by this investigation, been so slight as to be practically negligible."

[5] *Op. cit.*, pp. 53-54.

[6] Ralph W. Marquis, *Economics of Private Forestry* (New York: McGraw-Hill Book Co., 1939), pp. 27-37.

the stumpage value of "produced timber" is product-price determining.

"If the logs for manufacture come from a cultivated forest, the cost of producing lumber or other products properly includes the cost of the logs. The cost of such stumpage is one of the determinants of the value of stumpage, which in turn is the cost to the lumberman and one of the determinants of the price of lumber. On the other hand, the cost of logs from a virgin forest is not properly included in the costs of manufacturing lumber when such manufacturing cost is considered as a determinant of supply and an influence on lumber prices . . . Stumpage that derives its value from the value of the product cannot be reckoned as a cost in determining this same price of the product."

Such a distinction between "virgin timber" and "produced timber" is highly artificial and unsound. The remaining areas of virgin timber have been in fee ownership for many years. Substantial investments in costs of protection, administration, and carrying charges are involved. There has been produced within them through conscious effort what might be termed a utility of time which is as real as a utility of form or of place. On the other hand, many of the second-growth forests which now exist have developed with no conscious effort other than that involved in the claim to ownership. Thus it becomes impossible to distinguish between the two in terms of conscious effort.

Furthermore, the fact that timber is a crop means that the existing timber, both "virgin" and "produced," can be replaced by the expenditure of productive effort. In the determination of market price, historical costs are not relevant. The only alternative to selling an existing stock of goods in a given market at whatever price is offered for it is to sell it in a different market—different either geographically or in time. Thus the cost element in the determination of market price is essentially the seller's anticipations of future prices. The relevant costs of production are future costs, for it is these which bear on the anticipations of sellers and buyers. Once the possibility of producing timber is granted, such future costs exert their influence equally whether the extant crop is virgin or produced.

Thus in the theoretical determination of the market price of stumpage the influence of costs of production on the position and shape of the supply curve is the same for timber of a particular quality, whether it is virgin or second-growth. Further, the usual statement of competitive price theory that the market price *tends* to equal the normal price applies to all types of timber. However, in evaluating the significance of this tendency it is essential to consider both the relative importance of virgin timber in the economy's timber supply and the distinctive economic characteristics of forestry enterprises.

In a forest economy dominated by virgin timber it is obvious that economic forces have had but limited opportunity to adjust the quantity of timber so as to bring market price into equality with normal price and so with the cost of production. Such a situation is exemplified by past experience in the United States during which market price appears to have been substantially below normal price and entrepreneurs have not been attracted to forestry enterprises since stumpage could be bought more cheaply than it could be produced.

As the virgin timber is liquidated and the forest economy shifts increasingly to second- and third-growth timber, the opportunity for economic forces to affect the quantity of timber increases and it becomes theoretically possible that market price will come into equality with normal price and so with the value of the economic effort required to produce the

timber. However, the significant question is the extent to which this will actually occur. In the absence of institutional obstacles a substantial degree of equality between market price and normal price can be expected under conditions of a relatively stationary economy, for goods which are subject to rapid changes in production, or for some combination of these characteristics. Against these requirements the actual situation for forestry is seen to be one of a highly dynamic economy with rapidly changing markets and a production process which is sluggish in response to changes in productive effort to a degree unknown in other economic enterprises. As a result, and aside from all questions of institutional influences, any equality between market price and normal price for stumpage can be expected to be both fortuitous and transitory.

As Alfred Marshall[7] has clearly pointed out: "As a general rule, the shorter the period which we are considering, the greater must be the share of our attention which is given to the influence of demand on value; and the longer the period, the more important will be the influence of cost of production on value." In interpreting this statement, "shorter" and "longer" are best thought of as being relative to the length of the production cycle. As has been emphasized above, the usual period of economic decision and economic activity is extremely short as contrasted with the length of the production period of forest trees. For example, assume that, as is the usual practice, a year is considered an appropriate unit of time for the analysis of the market price phenomena of timber. For most manufactured products such a time unit would be a multiple of the production period and for most agricultural products, with the exception of orchard-type crops, it would be at least equal to the production period. For timber, however, the usual production period is anywhere from fifty to one hundred fifty times this long. Thus, for any period of time ordinarily used in price analysis the pricing of stumpage is, in the Marshallian sense, an extremely short-period phenomenon.

As a result, demand is the primary determinant of stumpage price. It appears, therefore, that even after the liquidation of the virgin forests, for any usual period of economic analysis, such as a year, stumpage prices will be largely determined by the price of forest products while the costs of production of stumpage will be of limited significance in determining the price of forest products. While there will be some indeterminate element of product-price determination in stumpage prices, it can be expected to be wholly overshadowed by the forces of residual determination. This follows from the disequilibrium of market price and normal price which can be expected in an economy characterized by shifting demand during a period of time too short to permit any substantial change in production. Any equality of the two which might actually occur would be essentially coincidental. Theoretically, at least, the effect of this residual determination may be either negative or positive. In other words, market price may be either forced below or held above normal price. It appears possible that this latter situation now prevails in some segments of the forest economy and may be more common in the future.

It might also be noted here that this same type of situation results in a much less satisfactory basis for entrepreneurial expectations in forestry than in other enterprises. In most enterprises the experience of one or two decades covers several to many production cycles and

[7] Alfred Marshall, *Principles of Economics*, 8th Ed. (London: Macmillan and Co., Ltd., 1920), p. 349.

provides a fairly adequate basis for expectations as to production changes needed and to be expected in response to changes in demand. In forestry, however, a corresponding experience base covers only a fraction of a production cycle and is a proportionately less satisfactory basis for expectations.

Thus the simple fact of the length of the production period of forest trees makes the two-way mobility assumption of the competitive adjustment invalid except in terms of very long periods of years. The resulting difficulty is greatly magnified by the extremely high ratio of inventory to annual sales resulting from the fact that trees are the "factory" as well as the product. For example, if it be assumed that an equilibrium price situation had been achieved and was then followed by a decline in demand, the resulting excess of production pressing on the market would be multiplied many times by the necessity of reducing growing stock to re-establish the equilibrium situation. This in turn would lead to a pronounced depression of stumpage prices below costs of production which would continue over a prolonged period while the sluggish production adjustment took place. On the other hand, if demand rose following the establishment of an equilibrium, the need for increased production would be multiplied many times by the necessity of increasing growing stock to increase production. Prices would rise above production costs and a prolonged period of deficient timber supplies would ensue.

It might be held that this type of problem is not unique to the field of forestry but occurs to some degree in almost all forms of economic activity. This is, of course, true. For any form of production there is a lag in the re-establishment of equilibrium following a shift in demand, the length of which depends on both institutional factors and the type of production process. The difference is one of degree. However, the magnitude of the degree is such as to place forestry in a distinctive economic context. Aside from all institutional problems, as long as demand is unstable pronounced conditions of disequilibrium between market and normal price prolonged far beyond the usual period of economic action and planning can be expected to develop simply as a result of the inherent nature of forest production.

This basic problem is both partially hidden and made the more complex by the possibility of extreme flexibility in volume of cut which is combined with the extreme sluggishness in response of the quantity of timber extant to changes in productive effort. When shifts in demand occur, the exigencies of the moment can be met readily by either holding timber on the stump or overcutting growth. If the shift in demand is temporary, no serious problem arises. Indeed, it is only through some combination of these procedures that the problem of cyclical shifts in demand can be met by forestry enterprises. However, if the shift in demand represents a permanent change the extent of the maladjustment is compounded by this short-period adjustment. If demand has declined, the short period adjustment increases growing stock while the long period need is for reduction of growing stock. On the other hand, and probably the more serious of the two, if demand has increased, the short period adjustment reduces growing stock while the long period need is for increase in growing stock.

III

The implications of these economic consequences of the simple biological facts of tree growth extend well beyond the

analysis of the theoretical aspects of stumpage value. Under a *laissez faire* philosophy the criterion of proper allocation of productive effort is that of equal returns to equal productive effort in all lines, since under such conditions there would be no possibility of increasing total returns through shifting a unit of effort from one type of activity to another. Reliance is then placed on the action of competitive forces to bring about such an allocation. When, for any particular good, market price is either higher or lower than normal price, it is evident that this desired allocation of resources and effort has not been achieved.

Thus the same type of analysis that indicates the probability of a substantial discrepancy between market price and normal price of stumpage also indicates the probability of a substantial failure to allocate the optimum effort to forestry enterprises. Aside from all institutional problems, competitive economic forces cannot be expected to maintain a proper allocation of resources to forestry simply due to the problems arising from the inherent nature of the forestry production process in a dynamic economy. The actual allocation may be either greater or less than the optimum.

In a modified *laissez faire* economy social action in the realm of production is usually undertaken either (1) to modify or control existing institutions so as either to enable economic forces to lead to the competitive adjustment or to simulate the results of the competitive adjustment, or (2) to modify the results of the competitive adjustment in those instances in which the economic consequences conflict with particular social conceptions. In the development of social action in the field of forestry through land use planning programs and other devices it is important to realize that the inherent economic characteristics of forestry production place a definite limit on the results which can be achieved through manipulation of the institutional environment. At the same time these problems emphasize the importance of developing a favorable institutional environment, since even at best a full adjustment of forest production to needs cannot be expected.

The significance of this condition to forest policy is obvious. It is not the purpose of this paper to develop these implications. However, it should be made clear that this analysis does not necessarily lead to the conclusion that more centralized planning is needed since it is frequently held that it is under conditions leading to prolonged and difficult adjustments to unforeseen changes in circumstances that a dispersion of decision is most desirable.

In the development of land use planning for forested areas it is essential to study both the institutional problems and the economics of the production processes being considered. A clear conception of the problem is the necessary base for adequate analysis and action. Further development of the economic theory of forestry holds promise of contributing much to such a clarification in the conception of the forest problem.

Summary

In applying the analytical methods of economic theory to forestry, it is necessary to allow for the effects of the distinctive economic characteristics of the forestry production process. Two such characteristics of great importance are (1) the extreme length of the production process, which usually falls in the range of 50 to 150 years, and (2) the fact that trees are both "factory" and product, resulting in a ratio of inventory to annual sales (in terms of board foot volumes) averaging more than 20 to 1.

To illustrate the effect of these characteristics, the theory of competitive price is applied to stumpage values with the conclusion that, aside from any question of institutional effects, pronounced disequilibrium between market price and normal price may occur over prolonged periods of time. The same analysis shows that even under the action of competitive economic forces the allocation of economic resources and efforts to forestry may vary substantially from the optimum over long periods of years.

Further clarification of the forest problem requires theoretical as well as institutional studies.

The Development and Practice of Compensation and Betterment in Present English Planning Law

By DONALD MONSON* *and* ASTRID MONSON**

THE Town and Country Planning Act of 1947 went into effect in Great Britain on August 6, 1947. Together with the New Towns Act of 1946 it forms the basis of far-reaching changes in the development and ownership of urban land. Since we in the United States adopt many of the legal concepts and practices first applied in England, and since we have had in general a common approach to land tenure, the extent of the recent changes in England has a more than passing interest for U. S. land economists and planners.

Recent British planning law may be divided roughly into three phases: the planning of land uses in the public interest; the special cases of the New Towns; and the question of transition involved in changing from a system of land development initiated by speculators to one where development is guided by official authorities in the public interest. This last phase is generally spoken of as "compensation and betterment" and is the subject of this article.

Present English land planning is based on two assumptions. The first is:

> "the assumption . . . that national planning is intended to be a reality and a permanent feature of the administration of the internal affairs of this country. We assume that it will be directed to ensuring that the best use is made of land with a view to securing economic efficiency for the community and well-being for the individual, and it will be recognized that this involves the subordination to the public good of the personal interests and wishes of landowners."[1]

The second assumption is that in the transition no local authority has either the jurisdiction or the financial resources to meet the problem and that hence planning must be on a national basis.

The difficulties of compensation and betterment follow from the fact that it severely curtails the legal practices in regard to the use of land which existed before the 1947 Act: practices which largely attempted to preserve in a highly developed economy the purely individualistic approach to land ownership.

The 1932 Planning Act

Under planning acts in force prior to 1947, British statutory planning authorities were liable to claims for compensation from owners adversely affected by any planning proposal. Repeatedly in British planning publications it has been complained that this fear of paying compensation has been the chief obstacle to planning; or, as one writer puts it, that:

> "planning has hitherto been governed far too much by local and short-term financial considerations. Because local authorities have not been able to afford compensation for reductions of development value, they have had to allow building to take place in too haphazard a manner. Suburbs have spread over vast areas that should have been green-belts for cities. It has not been practical to provide adequate open spaces in built-up areas, or to reduce housing density upon rebuilding. And often it has been necessary to site schools, libraries and other public buildings where land was cheapest rather than in the best places."[2]

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[1] The Hon. Mr. Justice Uthwatt, Chairman, Expert Committee on Compensation and Betterment, *Final Report* (London: His Majesty's Stationery Office, 1942), p. 11.

[2] Town and Country Planning Association, *Planning Britain's Land* (London: the Author, 1947), p. 11.

The above could just as well be said of the present state of U. S. city planning. Financial considerations do not permit our planning agencies to plan as they might wish; the development of fringe areas is, by and large, still in the hands of speculators, with planners still "studying the problem" or at best trying ineffectually to tidy up the "haphazard building" and to supply schools, roads and utilities after development has taken place rather than, as logic demands, before. In recognition of this fact, it may be said parenthetically, Senate Bill 1070, which at the time of writing is pending in Congress, provides federal loans to municipalities for the acquisition of open fringe areas and for supplying them with the necessary public facilities in advance of their development, which—since the city owns the land—can be controlled in the interests of sound community growth.

Between the wars British by-law regulations attempted to control development in much the same way as U. S. zoning practice does at the present time. In both cases it was found that land can be zoned from a use which brings the developer a low return to one which gives him a higher profit, but that in practice it is almost impossible to reverse the procedure.

In the testimony before the Barlow Commission[3] it was brought out that the British local planning authorities were so afraid of incurring claims for damages that in 1937 it was proposed to zone enough land for residential development to accommodate a population of 291 million—compared with an actual 40 million!

Under the 1932 Planning Act, a person whose property was injuriously affected by the operation of a planning scheme could claim "compensation" from the planning authority, and the planning authority could claim "betterment" from the land owners who received increased value from the operation of the scheme.[4] In theory the two were supposed to balance each other, since planning controls would not destroy but only shift land values from one place to another.

However, as the Barlow Report pointed out, there were three reasons why this theory did not work out: (1) By assessing each piece of property separately, the tendency was to so value that the summation of the awards would be higher than the total prospective development in the country would warrant. (2) It was difficult accurately to assess betterment against a particular planning scheme. (3) It was not practical to levy betterment unless and until an owner sold his land.

The Barlow Report's Contribution

Two remedies had been advanced for the financial difficulties involved in the control of city growth: (a) purchase by the municipality and /or the state of the vacant fringe land, or (b) acquisition by the public authority of the development rights to that land. The second alternative was advanced by the Barlow Report as a way of by-passing the difficulties inherent in nationalization of land and still achieving the desired physical results.

[3] There have been three major reports which contain the basis of British present-day land planning. They are: (1) The Barlow Report. Sir Montague Barlow, Chairman, Royal Commission on the Distribution of the Industrial Population, *Report* (London: His Majesty's Stationery Office, 1940). This report investigated the factors resulting in the misuse of urban land before the Second World War, and outlined the necessary steps to achieve its best use. (2) The Scott Report. The Right Honorable Lord Justice Scott, Chairman, Committee on Land Utilization in Rural Areas, *Report* (London: His Majesty's Stationery Office, 1942). This report did for rural land what the Barlow Report did for urban areas. (3) The Uthwatt Report. *Op. cit.* This report investigated in full the problems of compensation and betterment raised by the Barlow Report, and is the document which developed the theory which forms the basis of the present law governing the transition from speculative to public control of land development.

[4] Barlow Report, p. 116.

The Barlow Report proposed a "National Development Board" which would on a given date acquire by compulsory purchase the development rights to all undeveloped land in Britain. The freehold would remain in the possession of the owner, but he would hold it subject "to the condition that no development of it might take place without the consent of the Board."[5]

The Barlow Commission then went to the Coal Act of 1938 to find a precedent for the amount of money the state would pay the owners for their development rights. The Coal Act had introduced the idea of a "global" amount of compensation when the state took over a natural resource which had previously been private property. Rather than assessing each holding separately on the basis of market values under the old system, the global theory held that the value of such a class of property to the nation must first be assessed as a unit—a global amount—rather than as the summation of individual valuations. The object of the global amount system is to prevent over-valuation.

It was estimated that a sum of £400,000,000 would represent an intelligent guess of the value of all land development rights in Britain. It was suggested that this sum be raised by the Board as a loan, to be repaid out of the resale of development rights to prospective developers according to approved plans.

Under the proposed system an intending developer would apply to the appropriate planning authority for permission to develop, and would negotiate with the Board for the development rights. If the developer were not the land-owner he would also negotiate with the owner for title to the land, paying him on the basis of the value the land would have if subject to a perpetual deed restriction limiting it to the use it had before the proposed development were carried out. In other words, the developer would pay the Board for lifting the restriction.

Should the owner refuse to sell, the Board, under the Barlow proposal, was to have the right in the public interest of itself resorting to compulsory purchase, or could give that right to the intending developer.

It must be understood that the Board was to have no initiatory or planning powers; it was only to assess development values and collect the appropriate charges. Presumably the developer had to have planning permission from the planning authority before he could apply to the Board for the development rights.

The Barlow proposals were claimed to have the following advantages:[6] (a) Their adoption would effectively solve the compensation-betterment problem to which every scheme of public control and public acquisition of land gives rise. (b) The plan would not affect the mass of small house-holders, shop-keepers, etc., who make up the bulk of the property-owning class. (c) The plan would not interfere with rural land-owners so long as their land remained in agricultural use, nor the interests of farmers whether as owners or tenants. (d) The financial commitments, though substantial, would be on a scale quite different from those involved in land nationalization. (e) All future increment in the value of undeveloped land would enure to the national purse.

The Uthwatt Report

The above proposal was essentially the same as that made for undeveloped land in the later Uthwatt Report. However, the latter developed and refined the concept of "float" from a detailed analysis of the Barlow proposal. Because of the im-

[5] *Ibid.*, p. 118.

[6] Barlow Report, p. 119.

portance of the Uthwatt Report in the development of the British solution to the control of undeveloped land, a review of its analysis of land value on the urban fringe may be in order here.

British land valuation practice recognizes two aspects of development value—"intrinsic" and "potential" value. The first is the land's value for agriculture or for the use the owner is making of it at any given moment. The second is by nature speculative and is necessarily a "floating" value.

It is manifestly impossible to predict, without the initiative for town extension (i.e., city planning in the real meaning of the word) being in the hands of the responsible public authorities, where the potential float will settle. Thus, when land is acquired by condemnation or when development is prohibited under a plan, the owner can claim compensation only for the loss of a probability. "This probability is not capable of arithmetic quantification."[7]

If any local British planning authority had energetically operated under the 1932 Act it would have opened itself up to over-charges. The sum of the "probabilities" paid out in a series of condemnation suits or damage claims would have far exceeded the sum of the "intrinsic" value plus the "global" value of the probabilities acquired. The Report estimates that the over-valuation would produce a figure two or three times as great as the actual global floating value. It is therefore not surprising that local authorities avoided claims for compensation by zoning six times as much land for residential zoning as necessary.

"It is obvious that no purchaser of the whole of the development rights in any complete region would pay more than the intrinsic value of such rights; and such value would be exceeded if the total possible demand were artificially increased so as to include the possibility that the 'floating value' might settle at more points, or to a greater degree, than in fact it can."[8]

If, however, land is taken out of the list of potential building sites by public purchase for open spaces, the value it had as building land is not destroyed. It merely shifts to the remaining land.

"It is obvious that if all the land of the country were in the ownership of a single person or body, the mere shifting of values from one piece of land to another would not call for any financial adjustment [i.e., it would not affect the amount of the global sum] and the need for paying compensation or securing betterment would disappear."[9]

The above analysis, of course, opens up the question of land nationalization. Both the Barlow and Uthwatt Reports reject nationalization. The considerations leading to this rejection were entirely "practical:" the political controversy would be keen, the financial obligations too great, and lastly, excessive administrative machinery would be required.

Were nationalization resorted to, it was argued, every small shop-keeper and house-owner would be pointlessly disturbed. There would be no public purpose served since it is only when a change in land use is contemplated that the public interest is involved. If all these people were disturbed and harrassed by the necessary bureaucratic machine, it is likely that the government would fall. The vast sums necessary for land nationalization would have to be met by taxation (since confiscation would be even more bitterly opposed by the middle classes, the balance of power). The whole process would in reality be only a paper transaction since the tax would fall largely on those to be compensated.

[7] Uthwatt Report, p. 14.

[8] *Ibid.*, p. 15.

[9] *Ibid.*, p. 16.

The basic assumption behind the Uthwatt Report was that "under a system of well-conceived planning the resolution of competing claims and the allocation of land for the various requirements must proceed on the basis of selecting the most suitable land for the particular purpose, irrespective of the existing values which may attach to the individual parcels of land."[10]

The essential points of the Uthwatt proposal were summed up as follows:[11]

(a) The placing of a general prohibition against development on all undeveloped land outside the built-up areas and immediate payment to owners of the land affected of compensation for the loss of development value. (b) Unfettered determination through planning machinery of the areas in which public or private development is to take place, the amount and type of development being determined as regards development for public purposes by national needs and, as regards private development, by private demand. (c) Purchase by the state of the land itself if and when required for approved development, whether for public purposes or for private purposes. (d) In the case of approved development for private purposes the leasing of such land by the state to the person or body undertaking the development.

It is in the substitution of the concept of the purchase of development rights for that of land nationalization that we have the essential feature of British land planning law: the free-hold remains with the owner who can decide to sell, lease, or maintain without bureaucratic hindrance; the right to develop alone is taken from him. This typically English solution to a problem which has always eluded Marxist land theoriticians neatly evades much of the trouble involved in nationalization, and makes it possible with a relatively small sum for compensation to let development proceed as rapidly as the national resources allow.

When it came to precising the "global" sum, the Uthwatt Committee was indefinite. It recalled the Barlow Commission's £400,000,000, but pointed out that a fair way of arriving at the amount of the "general compensation fund" would be to calculate the annual amount of development between the wars and use the resulting figure in the light of future economic prospects: the possible decline in population, materials shortages and rising costs, the decrease in international trade, etc. This was but to say that past trends could be only a guide, as the value of development rights depends upon future rather than upon past conditions.

In addition to the global sum, the Uthwatt Report proposed additional compensation to owners of "dead ripe" land who were prevented by planning schemes from completing their developments. It was proposed to compensate such owners, over and above their share of the global sum, for roads, utilities, and other expenditures incurred by them in good faith before the planning scheme stopped them from carrying through their development. Thus "dead ripe" land was a convenient term for a troublesome transition problem bound to occur in any country when the initiative for urban development passes from private speculative hands to the duly elected public bodies—assuming, of course, that legitimate rights are compensated and not confiscated. The distinction must, however, be clearly understood between compensation for dead ripe land and payment for development rights. The former is strictly for expenditures made for imminent development; the latter is for possible development and is a purely speculative value.

The Coalition White Paper of 1944

In June 1944 the Coalition Government presented to Parliament a White Paper (Command 6537) in an attempt to

[10] Uthwatt Report, p. 13.

[11] *Ibid.*, p. 28.

frame an act dealing with compensation and betterment. This was the first official government proposal on this subject and while it did not become law, it did contribute toward shaping the later 1947 Act.

The White Paper criticized the Uthwatt Report for not treating developed and undeveloped land on the same basis. The Paper held that the "town areas" in the Report were difficult of demarcation. It also pointed out that compensation for coal land held in large tracts was quite another matter from that for urban land in a multiplicity of ownerships. It rejected the global theory and stated that the only payments for development rights should be to owners whose applications for development were refused. The White Paper proposed a Central Land Committee to work out a formula for fair compensation within five years.

While this proposal rejected the global sum theory, it met with even less approval from land owners and agents than the Uthwatt proposals. The cry was raised that this would result in even less payment than the global sum, since the government would require bona-fide submission of applications for development as a condition of collecting compensation.

The final 1947 Act bears the imprint of the White Paper in that claims on the compensation fund are open to owners of any land irrespective of whether it is urban or fringe, and that the actual formula for distributing the fund will be worked out in the future after the Central Land Board has received all the claims, rather than being specified in the Act itself.

The 1947 Town and Country Planning Act

The 1947 Act rejected the main thesis of the Coalition White Paper and in effect went back to a variation of the Barlow Commission's global theory of compensation. The Act resolves the problem of compensation and betterment as follows:

(1) All future development is subject to permission granted by the duly constituted planning authority. (2) Planning permission makes the developer subject to a development charge assessed by and payable to the "Central Land Board," i. e., the Barlow Report's National Development Board come to life. (3) All development rights are taken over by the state. While the Act specifically denies that owners have any "right" to compensation, nevertheless a fund of £300,000,000 is established from which "hardships" resulting from the loss of development rights will be alleviated. (Note the closeness to the Barlow Report's global sum of £400,000,000.)

The 1947 Act established the theory of the separation of development value from freehold value. Land value is now based upon the use to which the land was put on the "appointed day"—July 1, 1948. The "existing use" value of land for valuation purposes is held by the Central Land Board to be as if the land were subject to a perpetual deed restriction limiting its use forever to that prevailing on the appointed day.

The administrative functions of the Central Land Board fall into two broad categories: the division of the £300,000,000 fund, and the assessment and collection of development charges. Currently the first is the primary concern and is arousing widespread interest in the Act but, once Parliament accepts a scheme for distributing the fund and the claimants have been paid, the chief function of the Central Land Board will be to assess and collect the development charge.

Payments from the Fund for Depreciation of Land Values

"The Government takes the view that owners who lose development value as a result of the passing of the Bill are not on that account entitled to compensation. They recognize,

however, that if no payments were made, hardship would be caused in many cases and they have decided that a capital sum should be made available out of which payments should be made to land-owners."[12]

The hardship arises out of the fact that many owners of land on the appointed day had paid high prices for their land because they meant to develop it. As they lost their development rights under the Act and must pay a development charge, they are in effect paying twice for the development rights—which is recognized to be a hardship. It is this hardship which the £300,000,000 fund is to alleviate.

After July 1, 1948 any development of land is subject to a development charge representing such increase in the land's value as is due to permission for the particular development. Also, when land is compulsorily purchased (i.e., condemned) the price excludes any potential value which the land may have possessed prior to the Act for a purpose different from its existing use. In the normal case no compensation is payable if planning permission is refused.

The combined effect of these provisions of the Act is to "peg" the value of land to its use on the "appointed day" plus such development charges as have been paid. The owners lose the potential value for development and thus their land is "depreciated in value by the Act." The amount of this depreciation is known as the "development value."

The Act does not employ the term "use value," though that term is widely used to describe land values both in explanatory memoranda and among land agents. Instead of "use value," the Act refers to "restricted value," defining it as the value the land has under the restrictions imposed by the Act which limit it to its existing use. Development value can thus be defined as the difference between the restricted value and the "unrestricted value"—i.e., what the market value of the land would have been if the Act had not passed.

This has been interpreted to mean that in the future the market value of land will be the same as if the land were sold subject to a perpetual restriction limiting its use to that on the appointed day, a restriction which can be lifted from time to time only by paying a development charge to the Central Land Board (after planning permission has been obtained) equal to the increased value of the land for the use for which permission has been granted. Thereafter, the market value of the land is held to be its use or restricted value for the use now permitted, and a change of use must be accompanied by new planning permission and payment of a new development charge.

The £300,000,000 will be divided by the Central Land Board according to a scheme to be devised by the Board after all the claims have come in. Claims must be filed by March 31, 1949, although the deadline can be extended to June 30, 1949. The Act does not permit further extension of the period for filing claims. Payments are to be made, after Parliament has approved a formula, by June 30, 1953. Compensation will be in the form of government stock, and interest (less tax) will be paid from July 1, 1948 to date of payment.

In a change in the basis of land tenure of this magnitude, there will be owners caught in the process of development. Owners of land defined as "ripe for development" are either exempted from paying a development charge or have a preferred claim against the £300,000,000. Owners applying for a certificate certifying that their land was "ripe" on the appointed day and therefore exempt from development charges, are urged by the

[12] Central Land Board, *Explanatory Pamphlet on Payments in Respect to Depreciation of Land Values (England and Wales)*, Form S.1.A., June 1948, ¶ 7.

Board also to file a claim against the fund in case they should be denied the certificate requested.

Exemption from payment of a development charge will, of course, reduce or eliminate any payment from the compensation fund which the owner may claim. Land is defined as "ripe" if the owner had a bona-fide building contract, had made a by-law (i.e., zoning) submission, or filed a building application at any time during the ten years prior to January 7, 1947. The by-law submission and building application must have involved the submission of detailed drawings. Should permission to develop ripe land be revoked, the owner will, in general, be compensated for abortive expenditures.

Marginal cases, where the land was purchased for development but the plans had not been submitted to the by-law authority, or a building contract was not in hand, are considered "near-ripe" land and are classed as "preferred claims" against the fund. However, should the near-ripe land be sold, it loses its preferred status on the theory that the intent of the preference was to expedite the contemplated building program by assuring the developer of an off-set to the development charge he had to pay. Since the claim is for hardship suffered by the owner on the appointed day, the new owner cannot expect preferred status.

An unfinished building is considered as if it were completed on the appointed day, and hence no development charge is made against the owner and neither has he a claim against the fund.

Owners of one-family plots who build before Jan. 7, 1952 are also considered preferred claimants on the fund. These owners are assumed to have purchased their land as building lots and to have paid the equivalent of the development charge to the seller. As they must now pay the charge again to the Central Land Board, they are in effect paying it twice, a real hardship which would retard building of sorely needed homes if their claims were not given preferred status.

Local authorities holding land on the appointed day have no claim against the fund, but neither are they subject to development charges. Even if the land is sold by the public body upon being no longer required for public purposes, it will not attract a development charge. Since the local authority is presumed to have paid a price for the land inclusive of the development value, the exemption of the land from a development charge upon resale will permit the local authority to recoup the development value. Land held by public corporations and eleemosynary bodies is treated in the same manner as that owned by local authorities.

The Central Land Board does not accept claims for very small amounts. If the development value is not more than £30 per acre or one-tenth of its present use value, no claim will be paid. The Board is discouraging the submission of such small claims.

A number of "sharp practices" have arisen in regard to claims against the fund. In some cases, land is still sold at its "building value," thus subjecting the purchaser to double payment for the development value: at the time of purchase to the seller, and later when the development charge is levied by the Board. The seller's claim against the fund is sometimes represented as justifying such sales, even though the amount of the claim, if any, is uncertain. The claim itself is thus sold as a speculation.

Naturally persons who are not estate agents (i.e., real estate brokers and managment agents) are not aware of all the implications of the Act. In order to eliminate certain of the various possible

sharp practices, the Central Land Board is advising prospective buyers of land that:[13]

(a) Building value now belongs to the state. (b) They should always ask first, and before the price is settled, whether the development charge is going to be paid by the buyer or the seller. (c) Buyers should not pay for the seller's claim to the £300,000,000 as a part of the price. The claim may or may not be paid; it may not be paid in full; anything paid for the claim is a speculation. (d) Buyers should pay building value for the land only if the seller has agreed with the Central Land Board upon a development charge which he will pay. (e) If the buyer is to pay the development charge, he should pay the seller only the existing use value.

The Board lays out three courses for sellers to follow which will be fair to buyers who want a house immediately:[14]

(A) To sell the land at existing use value, leaving the buyer to pay the development charges. (B) The seller to pay, or agree with the Board to pay the development charge; to disclose the amount of the charge to the buyer; and then to sell the land at a fair price, including the development charge, direct to the person who wishes to erect the house. (C) The seller to pay the development charge; erect the house himself; and then sell the house and land at a fair price, including the development charge.

Development Charges

As has been stated above, any change in land use is liable to attract a development charge payable to the Central Land Board. In some cases the charge may be assessed at nil. There are a number of categories of land in which the owner is liable for a development charge but is also entitled to submit a claim against the fund. Naturally the landowner is eager to obtain a low development charge but as large a share of the £300,000,000 as possible. The Board offsets the one against the other. The most important of the categories in which charges and claims may both be payable have been mentioned: near ripe land, and single-family dwelling plots. These have been given preferred status and, in the case of many small lot holders, the Board has already paid claims off-setting the development charges assessed.

The general principle behind the development charge is to secure the sale, as far as practicable, of land in the open market at its value for existing use. The Central Land Board has considerable discretion in the application of this governing principle. Once a charge is paid, the land can be freely sold at prices reflecting the value of the land used for the permitted development. Subsequent rises in land value as developed do not attract additional charges.

The charge itself is generally paid by the developer, but the Board will accept payment from any person who has an interest in the land or with a right to obtain an interest. If the land is disposed of subsequent to the charge having been determined but before the development is completed, the Board may require a fresh application for determination of the development charge. The charge is generally due in one lump sum, but the Board has not yet fixed its policy and may accept payments in installments.

Under certain circumstances a landowner may apply for a variation of the charge. Should, for instance, the local authority give planning permission to adjoining landowners for schemes which will adversely affect the applicant's interests, or the planning permission relative to the applicant's undertaking be revoked or modified, he can apply for a variation of the determination.

Should a developer proceed without the consent and approval of the Central Land Board, the Board can assess the development charge as if it had been duly

[13] Central Land Board, *Advice on Buying and Selling a Site for Building a House*, November 1948.

[14] *Ibid.*

made and can impose a penalty of not more than twice the development charge. The developer can appeal the amount of the penalty to the courts but not the amount of the development charge. This limit on appeals applies to all cases involving development charges.

Obviously, this system presents a loophole if the owners do not have to sell at "use value." Should they refuse sale, or sell at black market prices, the intent of the Act would be frustrated. Hence the Central Land Board has the power of compulsory purchase. Up to November 15, 1948 the Board had not had to exercise this power, but certain test cases were being considered. It seems likely, however, that in the vast bulk of cases where only private parties are concerned, compulsory purchase will not be required to achieve the purpose of the Act. When it is recalled that between 75% and 80% of the housing now being built in Britain is "council" housing, it can be seen that compulsory purchase will be exercised largely by local authorities rather than the Central Land Board.

In ordinary cases the Central Land Board gives its decisions on development charges within one month of the filing date of the application for a determination thereof, so that no undue delay results from its functioning. The vast majority of cases are settled by negotiation between the Board and the "professional advisor" to the owner.

Minor improvements and changes of use are exempted from the necessity of obtaining planning permission and the payment of development charges. In general, buildings suffering war damage may be rebuilt with an increase of cubic content not greater than 10% of the original building cube without permission or charge. Buildings may be enlarged up to one-tenth of the original cubic contents before the land attracts a charge. Enlargement includes ancillary buildings.

Buildings may be changed within the same general category from one use to another, i.e., a shoe store may become a hardware store. Likewise, changes within the same industrial use categories are permissible without obtaining planning permission or paying a development charge.

In the case of dwellings the change without permission is limited to 10% of the original cubage, or 1750 cubic feet. Conversion of a house used as a single dwelling on July 1, 1948 to two or more separate dwelling units is also exempt from payment of a development charge.

Estate Agents and the Central Land Board

It is evident that administration of the 1947 Act is a complex undertaking. The Central Land Board has co-operated with the Town and Country Planning Association in holding a series of "schools" and public meetings throughout England and Scotland to explain the Act. These meetings are attended largely by land and estate agents, and much of the discussion and questions brought up involve compensation claims and development charges. The writers attended several such meetings in London, attended by between 800 and 1,800 persons each. From the discussion one had the impression that the £300,000,000 fund had definitely sweetened the transition from speculation to public control of English land development since much of the energy which might have gone into political opposition and obstructionism is taken up in attempting to figure out one's share of the fund and filing claims against it. The fact that the "Board has been authorized to make a contribution toward the fees incurred by claimants in the employment of persons professionally experienced in the valuation of land for

the purpose of making a claim"[15] has further aided in the acceptance of the compensation features of the Act.

The result of the long history of English thinking on compensation and betterment, together with the payment of compensation and the collection of development charges, has been that these features of the 1947 Act have become accepted, according to Sir Malcolm Eve, Chairman of the Central Land Board, as the payment of income taxes.

Summary

Considering the scope of the changes which the 1947 Act has wrought in English land compensation and valuation practices, the transition from speculative to publically-controlled development has been remarkably smooth. The public control of land utilization and development is no less absolute for recognizing the rights of the individuals who were caught in the transition. It is in devices such as the separation of existing use value from development value, the concept of "near-ripe" land, and compensation for "hardship" cases while denying the absolute right to compensation, that the English have found the oil to quiet the waters stirred up by the revolution in the concepts of land development and property rights now taking place. One is reminded that the English ended slavery by "compensating" slave owners while we in the United States fought a Civil War. Perhaps once again the English are showing the world their peculiar genius of "muddling through."

[15] Central Land Board, *Explanatory Pamphlet*, S.I.A., *op. cit.*, pp. 16.

A Short-cut Method for Evaluating Housing Quality†

By PHILIP DARLING*

AS a guide to the selection of sites for future slum clearance projects, the Housing Authority of Baltimore City needed additional information on the relative quality of housing in Baltimore's blighted areas. We wanted to be able to grade the blocks in these areas from the best to the worst in terms of over-all housing quality. Although a high degree of accuracy was not essential, we did require some assurance that the results would present a reasonably correct picture of relative housing quality over a large area. This article describes the method devised to achieve this purpose.

The most direct approach to the problem would have been through a new field survey in which all dwellings, or a sample of all dwellings, were examined. The possibility of making such a field survey was considered at some length with particular attention being given to the technique developed by the Committee on the Hygiene of Housing of the American Public Health Association.[1] This technique is not only the most authoritative available, but also it would have produced exactly what we wanted —a score for each block representing the average quality of housing in the block. It was finally decided, however, that neither the APHA technique, nor any other form of field survey, would be feasible, because of lack of funds. It was necessary, therefore, to fall back upon existing information, which in Baltimore meant the 1940 U. S. Housing Census.

A number of methods of using 1940 Census data to evaluate relative housing quality have been worked out. For example, one such method involves plotting on separate maps those blocks which fall in the poorest quarter of all blocks with respect to a number of Census items such as overcrowding, lack of private baths, rents, etc. The worst category of housing would then consist of the blocks which showed up on all maps; the next worst category would be those marked on all maps but one, etc.[2] Another method includes in its worst class all blocks with a mean average rental value of $15 or less, 60 percent or more of the total dwelling units needing major repairs or lacking a private bath, *and* a median year of construction prior to 1905. The next worse class includes all blocks with a mean average rental under $20 and not in the worst class; and with $20 to $25 rentals, a median year of construction prior to 1905 *and* at least 60 percent of the units either needing major repairs or lacking a private bath.[3] Succeeding classes are defined in similar terms.

The possible adoption of such methods based upon the 1940 Census raised a number of questions concerning the validity of the results:

1. It is now nine years since the 1940 Census was taken. The events of this period might well have had such marked effects upon housing conditions in the blighted areas as to

† The writer wishes to express his appreciation to Dr. E. R. Krumbiegel, Commissioner of Health, Milwaukee, Wisconsin, and to Mr. Harlin G. Loomer of the Philadelphia City Planning Commission, Philadelphia, Pennsylvania, for their assistance in making available the results of the APHA housing surveys conducted in their respective cities.

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[1] See American Public Health Association, Committee on the Hygiene of Housing, *An Appraisal Method For Measuring The Quality of Housing* (New York: 1945, Part I).

[2] This method has been employed by the Committee on the Hygiene of Housing of the APHA to delineate areas for more intensive analysis by means of the Committee's appraisal technique.

[3] See Cincinnati City Planning Commission, *Residential Areas*, Cincinnati, Ohio, December 1946, pp. 121-123.

render the 1940 Housing Census out of date and, therefore, valueless for our purpose.
2. Even if the 1940 Housing Census proved to to be sufficiently up to date, there remained the more basic question of whether the data provided could be used in such a way as to produce a true picture of housing quality. The Housing Census presents, by blocks, only a comparatively few items bearing on housing quality. It has been assumed in the past that these few items could be used as indicators of all of the many other items which enter into an over-all evaluation of housing quality. Thus an area having a high percentage of dwellings which lacked private baths, needed major repairs, were overcrowded, or were built before a certain date, was taken as being an area of bad housing for many reasons other than simply the presence of one or more of these factors. This assumption seemed to be logical, and upon it have been based the existing methods for translating Census data into measures of housing quality. However, no conclusive proof of this assumption has ever been made and its validity was therefore open to question. The Committee on the Hygiene of Housing, for example, was apparently skeptical of the possibility of a few key items being accurate indicators of over-all housing quality, since its technique covers virtually every measurable phase of housing quality.
3. Even if it could be proved theoretically possible to measure housing quality by means of a few key items, there was still the problem of evolving an actual technique. Of the half dozen Census items available by blocks which conceivably might be related to housing quality, which were the most significant? Could just one item be used or should there be a combination of items? Was age of structure, for example, a better or poorer measure of housing quality than rent? Or was age of structure at all related to quality? Examination of a number of techniques previously developed for using Census material indicated that all of those studied were based upon personal judgment and opinion and that there was no method of appraising their validity. There seemed to be a need for a means of comparing the relative validity of various techniques in order that the most valid could be determined.

Before using the 1940 Census to appraise housing quality in Baltimore's blighted areas it was considered necessary to find satisfactory answers to all of these questions. This was done by comparing the results of APHA surveys recently completed in certain other cities with 1940 Census data for the same cities.

APHA Technique

The method for appraising housing quality developed by the Committee on the Hygiene of Housing of the American Public Health Association starts with a field survey, generally on a sampling basis, in which information is recorded on a large number of items affecting housing quality. Penalty scores are assigned to each item which falls below a certain standard. These items, and the corresponding scores, are grouped under three headings: facilities, maintenance, and occupancy. The summation of the scores for these three headings becomes the "Dwelling Score" and represents the over-all quality of the dwelling. High scores indicate poor housing, low scores mean good housing.

The average quality of housing in any area can be indicated by using the median dwelling score for the dwellings in that area. In this way, for example, a dwelling score can be assigned to each block which would be representative of average housing conditions in the block. For more intensive analysis, block scores can be developed based upon the median facilities scores, the median maintenance scores, the median occupancy scores, or upon a combination of any two of these three subheadings. The scoring system lends itself to a wide variety of types of analyses based upon local needs.

The Committee on the Hygiene of Housing states that its experience has indicated that a block with a median facilities score of over 50 is nearly always in such bad condition that demolition and reconstruction would provide the only satisfactory solution. Median facilities

scores below 50 usually represent housing which is not sufficiently bad to justify demolition and such blocks would generally be considered for rehabilitation rather than reconstruction.

Selection of Study Blocks. APHA surveys have been conducted in about a dozen cities in the United States. A check of these surveys indicated that the Milwaukee survey was the most suitable for the purpose of comparison with the 1940 Census. There were two principal reasons for this conclusion:

a. The Milwaukee survey was based upon a sampling coverage of 50 to 100 percent. Many of the other surveys used much smaller sampling percentages and their reliability for areas as small as a block might be open to question.

b. Milwaukee block scores were based upon the combined facilities and maintenance scores and omitted the occupancy items. This was done by those conducting the Milwaukee survey on the assumption that such scores would be more truly representative of actual physical conditions than would block scores that included occupancy items, since occupancy conditions might be subject to fluctuations having no direct connection with physical conditions. Occupancy scores generally form only a small portion of total dwelling scores so that the omission of occupancy items would not usually alter seriously the relationship between blocks. Nevertheless it appeared that whatever difference might exist through the omission of the occupancy items would, for our purposes, be in the right direction. On this basis the Milwaukee scores were considered preferable to those from other surveys.

All blocks covered by the Milwaukee APHA survey were used except those having less than 25 dwellings. These blocks were omitted on the assumption that a small number of dwellings might tend to produce erratic results in terms of either the APHA survey or Census data. The deletion of these small blocks left a total of 168 blocks in 11 census tracts.

Any correlation discovered between the Milwaukee APHA survey and the 1940 Housing Census would be valueless if it did not apply to other cities. Therefore, for checking purposes, smaller groups of APHA block scores were obtained from two other cities, Philadelphia and New Haven.

In Philadelphia a large area had been covered on a 20-percent sampling basis and a small area on a 100-percent basis. A check of the 20-percent area by the Philadelphia City Planning Commission indicated that scores were accurate for fairly large subdivisions of the over-all area but tended to be unreliable for subdivisions as small as a block. Therefore, only the blocks surveyed on a 100-percent basis and having more than 25 dwellings were selected for study purposes. On this basis, scores were available for 31 blocks and all were used. The Philadelphia block scores included the occupancy item but information was available to compute new scores omitting the occupancy items. This was done so as to place the block scores on a comparable basis with those in Milwaukee.

A total of 35 block scores were available from the New Haven survey and all were used. The New Haven scores also included occupancy items but, since the necessary information was not available, it was not possible to remove them. For this reason the New Haven scores are not strictly comparable to those from Philadelphia and Milwaukee. However, as pointed out above, the occupancy items generally form only a small portion of total dwelling scores so that the discrepancy is probably not large. To summarize, a total of 234 blocks were used, subdivided as follows:

Milwaukee	168
Philadelphia	31
New Haven	35
	234

It would have been desirable to have

extended the study to cover APHA surveys in other cities, but limitations of time and resources rendered this impossible.

Individual Census Items

There are seven items available from the Housing Census by blocks which might conceivably have some degree of correlation with housing quality. These are discussed below:

1. *Tenant Occupancy.* As a general rule a high degree of tenant occupancy tends to accompany low housing quality. Nevertheless, there are several reasons why this factor is not suitable for measuring housing quality. The purpose of the comparison between the Census and APHA surveys in other cities was to develop a method which could be applied to Baltimore. This meant that the method had to be based upon factors which bear a reasonably consistent relationship to housing quality from one city to another. Tenant occupancy is not such a factor. A high degree of tenant occupancy might easily have a considerably different significance in a city where home ownership is prevalent than it would, for example, in New York City where rental occupancy is relatively common. Furthermore, the range of tenant occupancy may be very narrow over a large area. For example, in a group of 50 blocks of varying quality the percent of tenant occupancy by blocks may range only from 95 percent to 100 percent, and such a narrow spread would be of little assistance in differentiating housing quality. For these reasons no further consideration was given to this factor.

2. *Non-White Occupancy.* Negro families customarily occupy the worst housing. Not only are their incomes relatively low, but they are generally denied the freedom of choice of dwellings exercised by white families. Within any one city with a substantial non-white population there is normally some degree of correlation between non-white occupancy and housing quality but, as in the case of tenant occupancy, the pattern might well differ from city to city. Thus a relationship based upon conditions in a southern city would not be apt to be of value in a northern city with a very small Negro population. For this reason non-white occupancy is not useful as a direct measure of housing quality. As will be explained later, it does have an indirect importance as a means of adjusting rents in Negro areas.

3. *Age of Structure.* Although age is one of the most commonly used factors in delineating areas of bad housing, it is open to the same objection as tenant occupancy and non-white occupancy, namely, that the relationship between age and quality will vary from city to city. Thus a relatively old building in Oklahoma City might be a relatively new building in Boston. Furthermore, age may not be a good indicator even within a single city. Casual examination of the Milwaukee figures revealed no apparent correlation between age and the APHA block scores, and this conclusion was confirmed by means of scatter diagrams.

4. *Overcrowding.* Although this factor is also commonly used as an indicator of substandard conditions, it has certain drawbacks. Like any factor based upon occupancy, it is subject to fluctuations having no relationship to basic housing quality. Furthermore, the extent of overcrowding reported by the 1940 Census was generally so small in percentage terms that variations from block to block may very well have been purely fortuitous. For example, a block with 2-percent overcrowding might be called twice as bad as another block with only 1-percent overcrowding, but the difference in terms of actual dwellings could scarcely be regarded as significant.

5. *Need for Major Repairs.* This factor is intimately related to housing quality and should be an excellent measure of quality. Nevertheless it tends to be unreliable. There is no easily established standard against which the need for major repairs can be gauged, and answers depended in large part upon the Census enumerator's opinion and judgment. Since this judgment varied among enumerators the results are often inconsistent. In the case of the Milwaukee study blocks, the coefficient of correlation between the percentage of dwellings needing major repairs in each block and the corresponding APHA block scores was only .03, indicating virtually no correlation.

6. *Lack of Private Baths.* This would appear to be one of the best possible Census items to use as a measure of housing quality. The range of percentage values is wide enough to be useful, its relationship to housing quality should not materially vary from city to city, and it is only indirectly related to occupancy. Furthermore, it is not dependent upon the

enumerator's judgment and, therefore, should be reported with a high degree of accuracy. Nevertheless the coefficient of correlation between lack of private baths and the Milwaukee APHA block scores was only .39, not high enough to be significant.

7. *Rents.* Rents reflect a summation of all of the elements of housing quality, and they thus have a unique value in measuring quality. They are, however, also affected by a number of other factors not strictly related to quality, such as the size of the dwellings and their location within the city. Other things being equal, a large dwelling will have a higher rent than a small dwelling. This variation will, however, tend to cancel out as the number of dwellings considered increases, so that two blocks, each with a substantial number of dwellings, will be apt to have average dwelling sizes not too far apart. In selecting study blocks, those with less than 25 dwellings were omitted, and this should eliminate the more extreme variations in average dwelling sizes. The location factor should not be too important as between different blighted areas. Since nearly all urban blighted areas are close to the centers of cities, it is unlikely that there would be rent differentials based upon relative ease of access to these centers. Socially desirable locations bring higher rents regardless of proximity to city centers, but such locations are not normally regarded as blighted.

There is one factor, unrelated to housing quality, which has an important effect upon rents and that is Negro occupancy. A number of studies and surveys have proved that Negroes are forced to pay more than whites for equivalent accommodations.[4] Two $30 white rents would tend to indicate similar quality of the dwellings, but a $30 Negro rent would be likely to represent a dwelling of poorer quality. Since information is available by blocks on Negro occupancy, it is possible to adjust Negro rents to allow for this discrepancy. The method used was to reduce the average rents for entirely-Negro blocks by a certain percentage. Average rents for blocks partially occupied by Negroes were reduced in proportion. Thus, if the rent for a completely-Negro block were reduced by 40 percent, a block one-half Negro-occupied would be reduced by one-half of 40 percent, etc. Reductions of 20 percent, 30 percent, 40 percent, and 50 percent were tried, and the resulting rents were plotted in scatter diagrams against the corresponding APHA block scores. It appeared that a 40-percent reduction gave the best correlation. The coefficient of correlation between the unadjusted rents and APHA block scores was −.39; for adjusted rents (using a 40 percent reduction) it became −.53, a considerable improvement.

[4] See Corienne K. Robinson, "Relationship Between Conditions of Dwelling Units and Rentals, By Race," *Journal of Land & Public Utility Economics*, August 1946, pp 296-302; Also, Sara Shuman, "Differential Rents For White and Negro Families," *The Journal of Housing*, August 1946, p. 169.

Combinations of Census Items

It is apparent from the above discussion that no single Census item produces a significant degree of correlation with APHA scores. An investigation therefore was made of the effects of combining several different factors. It has already been pointed out that a combination of rents and non-white occupancy gave a better correlation than either item by itself, and it was evident that rents adjusted in this fashion should be one of the key factors in any further combination.

In addition to adjusted rents, lack of private baths and need for major repairs were selected as being the most significant items. It could be argued that the low coefficient of correlation obtained for the major repairs item would indicate that it should be given no further consideration. It was decided, however, to use this item —since it is so directly related to housing quality—but to give it a low weight because of its potential unreliability.

New series of scores for the study blocks were developed using varying combinations of these Census items, and each series was compared with the corresponding APHA block scores by means of scatter diagrams or the computation of coefficients of correlation. It was discovered that the relationship between the Census items and the APHA scores was not on a straight line basis. For example, differences in percentages of dwellings lacking private baths were much more apt

to be significant between blocks where these percentages were small than between blocks where they were large. In the same manner, minor variations in rents appeared to be more indicative of corresponding variations in quality at the lower rent levels than at the higher rent levels.

The combination of Census items which gave the best correlation with APHA scores is represented by the following formula:

$$S = \frac{150\ \sqrt[3]{C}}{R}$$

In this formula: S = Census block score. C = 3 times the percentage of no private baths plus the percentage needing major repairs. R = adjusted rents, i.e., the average rents reduced by 40 percent for non-white occupancy.

The factor of 150 is an arbitrary constant selected to bring the Census block scores up to about the same level as the APHA block scores. It could be varied or omitted without affecting the correlation with APHA scores, except that any variation of this constant would have to be accompanied by a change in the method described in the following paragraph for handling certain exceptional blocks.

It was discovered that there were some blocks with fairly low rents but with negligible percentages for lack of private baths and need of major repairs. In such instances the use of the above formula would give Census block scores of zero, or very close to zero; nevertheless the corresponding APHA scores were generally in the 20-to-40 range. A closer correspondence between the two sets of scores could be obtained if S was given a minimum value of 45-R, and the formula was, therefore, used with the provision that S could never be less than this figure. This means, in effect, that an average rent of $45 is necessary before a block can have a perfect score, and that any lower rent will produce a minimum score at least equal to the difference between the actual rent and $45.

Use of the formula can be illustrated with two examples:

Example 1:
Assume that for a given block the percentage of dwellings lacking private baths is 42.6 percent, the percentage needing major repairs is 1.2 percent, the percentage of Negro occupancy is 25.0 and the average rent is $27.43.

Then:

$$C = 3 \times 42.6 + 1.2 = 129.0$$
$$R = \$27.43 - (.25 \times .4 \times \$27.43) = \$24.69$$
$$S = \frac{150\ \sqrt[3]{129.0}}{24.69} = 30.7$$

Example 2:
Assume the same block except that the percentage of dwellings lacking private baths is only 2.6 instead of 42.6. S, worked out as above, would then be 12.6. However, in this case 45—R would equal 20.7, and S would be considered to have this value rather than 12.6.

Application of the above formula to the study blocks gave the following coefficients of correlation between the Census scores and the APHA scores:

Milwaukee	.77
Philadelphia	.84
New Haven	.90
All three cities combined	.80

In view of the nature of the original data these coefficients are much higher than might have been expected. Plotting the Milwaukee Census scores against APHA scores in a scatter diagram indicates that serious differences between the two series exist in only one out of 20 to 25 blocks and that all of these consist of high APHA scores and low Census scores. It would appear that the Census scores may occasionally represent conditions as substantially better than they actually are, but rarely as substantially worse.

There are two possible explanations for the exceptionally high coefficient of correlation of .9 obtained for the New Haven blocks. In the first place, the New Haven APHA survey was completed in 1944, while the Milwaukee and Philadelphia APHA surveys were not completed until 1948. There was thus only a four-year gap between the Census and the APHA survey for New Haven as compared to an eight-year gap for the other two cities. In the second place, the New Haven blocks covered the entire range from good to bad housing conditions, whereas the Milwaukee and Philadelphia blocks covered a relatively limited range since they were all located in blighted or slum areas. It is probable that higher coefficients could have been obtained for Milwaukee and Philadelphia if the range for these cities had been extended by having some of the blocks located in good residential areas.

The correlations obtained are not so high as to enable APHA block scores to be predicted accurately from the 1940 Census. It was not, however, the purpose of this study to be able to make such predictions, since this would have been too much to expect. The purpose was, rather, assuming that an APHA or similar survey was not possible, to determine if the 1940 Census could be used to produce a reasonably valid over-all picture of relative housing quality and, if so, how this could best be done. It is believed that the results obtained are sufficiently conclusive so that it can be said that these objectives have been accomplished.

It might be argued that the study sets up the APHA technique as a model or standard against which to measure the validity of other methods, and that there is no evidence to justify considering the APHA technique as such a criterion. However, the study does not necessarily start with this premise. If the results of two widely differing techniques of measuring housing quality do not agree, nothing is known about either method except that at least one method is not sound. Either one may be valid but, if so, the other must automatically be wrong. Or, both methods may be wrong. On the other hand, if the results do agree (or substantially agree) there would appear to be at least reasonable assurance that both methods are valid, and this assurance does not require prior knowledge that one of the methods is sound. Thus the results of this study might be taken as validating not only the Census approach but also the APHA's.

Although the results of this study covered only three cities there appear to be reasonable grounds for assuming that the method can be applied to another city with equally reliable results. The formula was developed by considering only the Milwaukee blocks and was then checked by applying it to the Philadelphia and New Haven blocks. The three cities are quite different from one another from the standpoint of size, geographical location, and type of housing, and yet the Philadelphia and New Haven correlations were even better than that for Milwaukee. Furthermore, the fact that a good correlation was obtained when all three cities were combined is significant. It would have been possible for good correlations to have existed for each of the three cities and yet for the combined correlation to be poor. Such a situation would not necessarily mean that the method would not work if applied to another city. It would, however, indicate that the method operates in different fashions in various cities and would thus increase the possibility that in some cities it would not operate at all. In the actual cases tested, however, the combined correlation coefficient of .8, instead of being

less than any individual correlation, is actually almost identical with the weighted average of all three cities. This would tend to prove that the method operates in the same fashion in all three cities and that it would be equally reliable when applied to a fourth city.

Application to Baltimore

In applying the method to Baltimore approximately 2300 blocks in 81 Census tracts were covered. The formula for determining block scores was translated into a series of tables which enabled the actual work to be handled quickly and accurately by clerical personnel. Since the method was still being developed as this work progressed it is not possible to give a reliable estimate of the time required, but it would appear that once the process is set up two clerks can handle at least 1000 blocks per week, and possibly substantially more.

The scores obtained ranged fairly evenly from zero to 100, except that a few of the worst blocks had scores as high as 150. For purposes of presentation, the scores were grouped into five categories and each category was given a descriptive title. These categories are as follows:

Score	*Title*
0—14	Satisfactory Housing
15—29	Fair Housing
30—44	Poor Housing
45—69	Bad Housing
70 & Over	Very Bad Housing

Statistics on the number of dwellings and the racial occupancy in the blocks in each category were obtained from the 1940 Census. The amount of area in each category was obtained by measuring (with a planimeter) from a generalized land use map the area in each Census tract which was predominantly residential. This area was then divided between the various categories in the same proportion as the number of dwellings in each category in the tract. It will be seen that this procedure was based upon the assumption that the number of dwellings per acre is uniform within the predominantly residential portion of any one census tract. While this assumption may not be strictly true, the amount of error which might be introduced would not be large enough to be significant.

A few of the more pertinent Baltimore statistics are presented in Table I. It is particularly interesting to note that the percentage of Negro occupancy increases steadily from 2.5 percent for "Satisfactory Housing" to 70.9 percent for "Very Bad Housing."

The final step was a determination of the indicated type of remedial action for the blocks in each category. It could be assumed, to begin with, that little or nothing need be done with respect to the blocks listed as "Satisfactory." Furthermore, it required only casual inspection of the blocks in the "Very Bad" category to be certain that they all should be demolished and the dwellings replaced. Somewhere in between, however, there should be a dividing line between those blocks which should be reconstructed and those which were still in sufficiently good shape so that rehabilitation is the appropriate remedy. Such a determination is basically an economic one since almost any block, no matter how bad its condi-

TABLE I—CHARACTERISTICS OF HOUSING SURVEYED: Baltimore Housing Quality Study*

Category	Number of Dwellings	Percent of Total Dwellings	Percent of Negro Occupancy	Area In Acres
Satisfactory Housing	10,015	7.6%	2.5%	465
Fair Housing	45,865	34.6	8.7	1,870
Poor Housing	26,325	19.9	22.0	1,052
Bad Housing	30,654	23.2	46.2	1,135
Very Bad Housing	19,495	14.7	70.9	692
	132,354	100.0%		5,205

*Based upon 81 surveyed census tracts out of a total of 157 census tracts in the City

tion, should be rehabilitated to a reasonable housing standard provided enough money were spent. In many cases, however, the cost would approach or exceed that of demolition and reconstruction, and in such instances reconstruction rather than rehabilitation should be the solution for existing deficiencies. A final answer would depend upon a detailed study of each block and the preparation of alternative cost estimates.

An approximate answer, however, can be obtained from the method developed by this study. It has previously been pointed out that the APHA has stated that its experience has indicated that a block with a median facilities score of over 50 should be torn down. An analysis of the Philadelphia and Milwaukee APHA block scores indicates that, in each city, the maintenance scores average 34 percent of the facilities scores. Since the APHA block scores used in this study for these two cities include both facilities and maintenance items, a facilities score of 50 would indicate, on the average, an APHA block score of 67. (The New Haven block scores were omitted from this calculation since they also included occupancy items.)

The formula for the line of regression for the combined Milwaukee and Philadelphia scores is:

$Y = .37 + 1.62X$
in which:
X = Census block scores
Y = APHA block scores.

From this formula it can be ascertained that an APHA block score of 67 corresponds to a Census block score of 41. Any Census score of over 41 would then indicate that the block should be reconstructed rather than rehabilitated. Although the method used to determine this dividing line is subject to a number of possible inaccuracies with respect to any one block, it is probably sufficiently accurate for purposes of rough estimating.

In applying this dividing line to the Baltimore scores it was decided on the grounds of conservatism to increase it to 44, or the top level of the "Poor Housing" category. On this basis the indicated action for each of the five categories becomes as follows:

Satisfactory Housing	No Action
Fair Housing	Rehabilitation
Poor Housing	Rehabilitation
Bad Housing	Reconstruction
Very Bad Housing	Reconstruction

Summary

It was desired to find a method of evaluating the relative housing quality, by blocks, of blighted and slum areas when an actual field survey was not feasible. The only source of data was the 1940 Housing Census, but it was not known whether the Census was sufficiently up-to-date to be reliable, whether it could be treated to produce a valid picture of housing quality or, if it could be so treated, which method was the best. Favorable answers to all of these questions were obtained by means of a comparison of Census data with the results of housing surveys recently completed in Milwaukee, Philadelphia, and New Haven in accordance with a technique developed by the Committee on the Hygiene of Housing of the American Public Health Association. The method developed from this comparison produces a score for each block based upon Census data, the score being representative of the average housing quality of the block. The blocks can then be sorted out into various categories of housing quality, and the number of dwellings, the type of racial occupancy, and the amount of area for each category can be calculated. Finally, the method allows a rough approximation to be made of the type of remedial action for the blocks in each category.

The Severson Community: A Glimpse of Northern Wisconsin in Process†

By ERVEN J. LONG*

The study described in this article was undertaken at the suggestion of the late Professor Leonard A. Salter, Jr., in conformance with his belief that in social research as much could be learned from investigation of extreme as of typical cases—that in fact certain insights can be obtained only through study of these atypical cases. Recognizing the smallness of his laboratory and the methodological difficulties of drawing significant conclusions from such a study, the author agreed to the publication of the paper with some reluctance. For these same reasons he formulates his general conclusions as hypotheses to guide further research. We believe, however, that the intimacy with which the facts in the community are understood and reported, and the careful effort to be faithful to the local residents' ideas, will commend the article to our readers.—(*The Editor*)

I.—The Community

THE Severson community[1] lived one generation. Its earliest origins trace back beyond the turn of the century, and the final page cannot yet be written on the story of its decline. Yet, as an agricultural community (defined as one in which the principal income comes from farming) its life spanned only about twenty-three years, from about 1916 to 1939. Its birth processes were slow, its youth vigorous and energetic, its maturity pleasant, though poor, and its demise lingering and painful.

The processes of growth and decline of this community were the results of the intermingling of many social and physical factors, each playing its own part, yet each inextricably intertwined with the other. Various public programs and activities, developed and introduced into the community during the depression, should have helped alleviate the distress incurred in making the adjustments necessitated by the disintegration of the community's economic base. These processes of adjustment, therefore, provided the circumstances and problems with which the local adaptation of these programs had to deal. The major analytical categories for the investigation of the relative accomplishments of these programs, which is the principal objective of this paper, are thus also provided by these processes. The experiences of the community, presented in some detail, provide a background against which the over-all objectives, procedures and accomplishments of the programs show themselves in sharp relief, making detailed analysis of the specific programs unnecessary. The paper is not so much the writer's analysis as a report of the sentiments of local residents, growing out of their own analyses of the consequences, for their community, of these activities.

The significance of this report derives principally from the light it may shed on some of the problems arising out of public attempts, through democratic action, to deal with general social-economic problems national in scope which, nevertheless, involve distinctly local characteristics and problems.

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[1] So called by all the people who lived there; more properly, perhaps, in the jargon of the sociologists, a *neighborhood*, referred to here, however, as a community since it is the *common* economic base and similarity of social experience rather than the social intercourse between farmers that is here discussed. For obvious reasons fictitious names have been substituted for the real names of persons and places.

Background. Located in one of the poorer counties in Wisconsin,[2] the Severson community was not particularly well endowed with physical resources at the time it was settled and opened up for farming. Originally, nearly all the land in and surrounding the clusters of farms comprising the community was covered with a heavy stand of white pine. These trees were very large, even for that area. As is the case in heavy stands of large pine, virtually no undergrowth lived under the trees. After the land had been logged off, about 1895, there sprang up a dense growth of worthless ferns, sage, heavier brush and inferior trees. The best of the trees were the few small clumps of second growth white pine. The larger stands of aspen[3] provided a very narrow margin for pulpwood cutters, and the paper birch[4] was worthless except for firewood as it is when it grows in groves by itself.

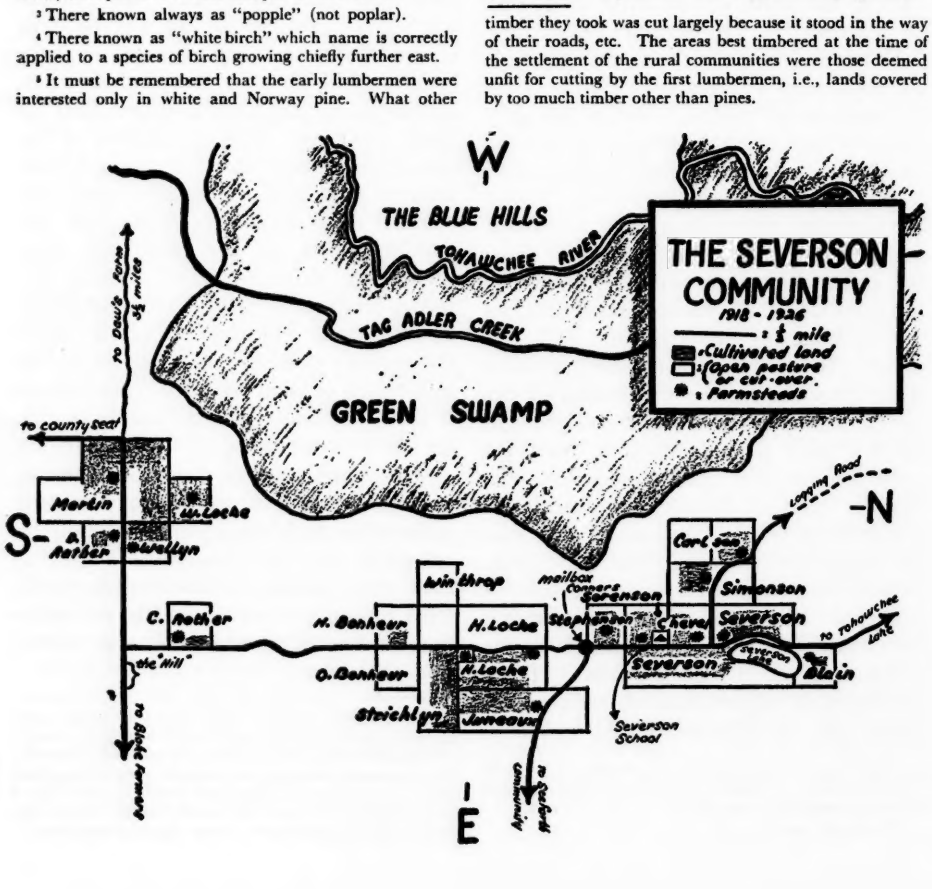
More valuable than the second growths, were the scattered pieces of timber left standing by the original loggers.[5] In the area later included in the Severson community most of this remaining timber was comprised of the trees indigenous to swamps (spruces, firs, cedars, and tamarack) plus a few small groves of upland trees growing princi-

[2] The county ranked 66th out of 71 counties, in farm income, both per acre of land and per farm in 1944.

[3] There known always as "popple" (not poplar).

[4] There known as "white birch" which name is correctly applied to a species of birch growing chiefly further east.

[5] It must be remembered that the early lumbermen were interested only in white and Norway pine. What other timber they took was cut largely because it stood in the way of their roads, etc. The areas best timbered at the time of the settlement of the rural communities were those deemed unfit for cutting by the first lumbermen, i.e., lands covered by too much timber other than pines.



pally on scattered, quite inaccessible knolls within the larger swamps.

Both the uplands and the swamps had been stripped of all sizable clumps of good, large, white pine. Such few trees as were left were usually mere shells, permeated by the "red rot" which is characteristic of the few big pines left standing on thoroughly cutover lands.

Three or four patches of jack pine sprang up on the sandier lands after early fires and were of sufficient size to provide a season's pulp work each for one or two families.

These few acres of timber scattered through the expanses of upland brush and swamp-land tag alders constituted the forestry heritage of the settlers in the community. The pine had been logged off years before its settlement. Actually, only a very few acres of merchantable timber stood on lands owned by the settlers as part of their farm holdings. The remaining timber was not their property, and so had to be appropriated by them by various means before it could be considered an economic resource.

Geographical Outlines. The Severson community was truly "isolated."[6] Direct communication with settled areas to the west and north was impossible; more than 10 miles of unopened land lay between the community and the nearest settlement or road. The isolation thus imposed was accentuated by the great Green Swamp, an almost impenetrable thicket of tag alders extending the length of the community and ranging from one to five miles in width. No summer roads could be built through the swamp, and even the winter sleigh roads had to be tramped down after the early snows to form a foundation of ice under the roads. Consequently, in the summertime the swamp was impassable to a man on foot, and even in winter the fear of getting lost in the swamp led the local people to stick close to the old logging roads, which petered out at the western edge of the swamp. West of the swamp, the Tohawchee River wandered forth and back, traveling four miles to gain one. Between the swamp and the river and westward from the river were the "Blue hills" covered in the main with inferior timber and brush.[7] In the valleys were many smaller swamps, covering from less than one to several hundred acres each.

The road connecting the Severson community with the farmers, country store and garage comprising the Seeforth community two and one-half miles to the east, was the more traveled of the two means of entrance. The southern end of the Severson community actually lay only a half mile from a cluster of farms comprising part of a third community, but a great, steep hill, practically impassable to vehicles, effectively separated them.[8]

To the south, the town road wound around brush-covered hills and skirted lakes and swamps for about five miles, emerging finally on the main highway six miles from the county seat. About two miles south of the Severson community the town road branched; the branch went westward and virtually only the mailman traveled it.[9]

Thus the Severson community farmers were the innermost tier of settlers, pressed tight against the wilderness. The isolation and small size of the community began to create unanticipated problems, important to the people and difficult to solve, as the combination of physiographic, social and economic factors blended to create a social process greatly different from the early aspirations and

[6] See the sketched map.

[7] Between the Green Swamp and the farms were several hundred acres of cutover, quite free of swamps, and in places quite open. An economic use of this land was made by some of the farmers for grazing.

[8] See section on *the hill.*

[9] See section on *the fill.*

expectations of the settlers who built the community. We will now outline some of these complications and measures taken to counteract them and to lessen the misery caused by them.

II.—The Processes

Almost by definition, a *social* unit is heterogeneous. Even the tiny Severson community was composed of several farm families, with great diversity of individuals. The community pattern of settlement and subsequent adjustment processes, were, of course, created out of the interrelated experiences of these individuals and families, a part of which are shown in the following tabulation. The order in which the families are introduced in the table is geographical (in terms of the settlers' original location) starting at the southwest extremity of the community and working around the crescent to the north.

The general community process, the outline of which is suggested in the experiences of these families, went through several phases. These include: (1) Settlement (1900-1917), (2) Early Foreclosure (1920-1929), (3) General Foreclosure and Exodus (1931-1936), (4) Resettlement, "Squatting" and Rehabilitation, and (5) The Present.

Settlement. Settlement began about 1902 at the two opposite ends of the community, by two families who truly went a-pioneering. By dint of hard circumstances they were soon obliged to go into logging; and farming became a secondary occupation. Then, starting about 1913, several families began to open up "places" in which to set up their buildings. They paid little attention to the type of land, merely "picking up a forty" and building

TABLE I—Processes, in Brief, Severson Community, Wisconsin

Farm Name (See Map)	Approximate Date of Acquisition	Approximate Date of Disposal or Abandonment	Cleared Acres	Original Encumbrance	Reason for Disposal	Present Use of Land
Daw	1933	1935	10	(?)	purchased to accommodate reservoir for Hanson Dam	under water
Martins	1902	1920	100	(?)	left state	abandoned *
Wm. Locke	1917	1918	35	$1,000	foreclosure; joined army	abandoned *
Dave Rather	1931	1935	20	0	sold to gov't	abandoned *
Wellyn	1917	1926	25	$1,100	foreclosure; left county	abandoned *
C. Rather	1922	1926	20	$1,200	left state temporarily	abandoned *
H. Bonheur	1917	1932	15	0	sold to Stricklyn	abandoned *
O. Bonheur	1917	1932	0	0	sold to Stricklyn	abandoned *
Stricklyn	1917	1936	40	$2,600	foreclosure; (repurchased later)	cranberry production (farm land abandoned)
H. Locke	1917	1935	60	$2,800	foreclosure	house for residence land abandoned
Juneaux	1917	.....	40	$2,400	.....	house for residence land abandoned
Stephenson	1915	1932	40	$1,000	foreclosure; house burned	abandoned
Sorenson	1913	.....	30	$1,200	.....	farming, this year
Chevel	1915	1936	30	0	sold; retired	abandoned
Severson	1902	1927	80	(?)	foreclosure	abandoned
Blain	1917	1927	25	$1,500	foreclosure	abandoned
Simonson	1913	1936	30	$1,200	foreclosure	abandoned
Carlson	1913	1929	25	$1,200	foreclosure	abandoned

* Farms purchased by federal government under Land Purchase Program.

on it. These families were Norwegians and Swedes who were jobless when the big mill in town shut down.[10] They settled in a part of America which seemed familiar, and tried to live by the only means they knew—subsistence farming combined with work in the woods.

The last of this first phase took place in a wave of settlement in 1917. Most of these settlers came there to farm. They had been tenants in Iowa, and decided to take up a stake in the much lauded, inexpensive, northern Wisconsin land. Though relative newcomers, they quickly became the community leaders, owned more machinery, better work animals and livestock than any of the earlier settlers. They built big barns, fine homes—won prizes at the county fair. They hired quality teachers for the school and insisted upon attendance by the children, arranged for non-denominational church services in the schoolhouse. For several years after their arrival the community took on real vigor. Though never having a lot of cash, these people lived well, ate well, had fine homes, and security. They owed only paltry sums on their farms; a few good years, so they thought, and they would be out of debt.

The land produced wonderfully, for cheap land. Clover grew as the farmers had never known it to grow in Iowa. Fifty bushels of oats per acre, though considered a good yield, was quite common; 150 bushels per acre was the normal potato yield. Isolation was actually an asset for producing disease-free potatoes for seed. Of course, machinery was a problem; the farms were too small to warrant purchase of expensive machinery by individual farmers. This problem was largely met by the communal purchase of a grain binder, grain drill, corn binder, corn planter and potato digger. One farmer purchased a tiny grain separator and a silo filler and did these jobs for his neighbors on a custom basis. The general practice of borrowing machinery, though not always appreciated by the owner, served to spread the machines over a larger use base.

There was always plenty of horsepower for the farms. Each farmer had one or two teams; and one farmer had a couple of extra teams that he kept for woods work and which were always on loan to farmers during the summer, often without his knowledge! Man power was also plentiful; every farmer had at least one son at home and some, two or three.

The surrounding cutover lands served as extended pastures for the farmers. Fences were run from the farmers' pasture corners back into the Green Swamp. As the cattle could not enter the Swamp, they were effectively enclosed in this area. In spots, the grazing was quite good, little grassy knolls were sprinkled all through the expanse of cutover between the farms and the swamp. The cattle from several farms would habitually group together, making it easy for the young farm boys on horseback to bring them home. About a section of the Tohawchee River bottom land provided wild blue-joint hay that could be cut when hay was scarce. This hay, though not good, would, if cut early enough, keep cattle and horses alive until spring.

Deer, and especially rabbits, were plentiful and every settler considered their meat a staple in his diet. The summers were pleasant, and rainfall plentiful. Nearly every farmer supplemented his farm income by cutting firewood for sale in town or by cutting railroad ties. Somewhat later they began to cut considerable amounts of timber for lumber, veneer and pulpwood.

[10] (Actually, burned down, as all sawmills seemed to do.) These Scandinavian families had worked in this area only a very few years; previously, they had located somewhat further south.

Early Foreclosure. Then came some rather disturbing events. Wellyn left his farm to go renting a hundred miles to the south. But his land was no good anyway, all on a side hill and almost pure sand. Cars used to get stuck in the road right in front of his house, the sand was so deep. Then Blain lost his farm. But he was a poor manager; built a 24-cow barn for eight cows, and broke only about 25 acres of land. About this time, Win Severson's mortgage was also foreclosed. This was the biggest and best farm in the entire group. Originally he had homesteaded it and so had it in the clear; then he mortgaged it to finance logging operations and paid off this mortgage during the first World War. He mortgaged it again about 1920, and couldn't keep up the interest. The house alone was worth more than the mortgage; but houses don't pay the interest and so he lost the farm. But Win, too, was a poor manager and didn't really like to farm.

Carlson was the next to lose his farm—but that wasn't much, a few acres of rock with sprinklings of dirt between, just enough soil to grow quack grass in a wet year.

General Foreclosure and Exodus. Then came the hard times! Butterfat sold in town for 18 cents a pound, eggs for 9 cents a dozen. Potatoes—the community's one cash crop—sold at 32 cents per hundredweight. Anyone could buy a good cow for $30.00.[11]

Strange things began to happen to the sheep, too. Flocks that formerly were fat and healthy began to fall off in weight. Each year saw the lambs more runty, the ewes more scrawny. Especially hard hit were the yearlings, mere skin and bones when spring finally came. These were flocks that had won county and state fair prizes a few years before. No explanation of this has thoroughly satisfied the settlers, save possibly that of an old farmer who said simply, "seems sheep can't live only about so long in one place." Perhaps, for the north, he was right.

The best farmers couldn't stand this very long, and when the drought came, and the grasshoppers came so thick they ate a man's shirt right off the fence post where it was hanging, they gave up.

About this time, the farmers heard of a wonderful new idea; the government was paying folks *not* to grow stuff. That was extremely easy to do, up there. So they bought a little marl at the W.P.A. pit and sprinkled it on the land. Then, though they long ago had found it wouldn't grow, they planted alfalfa. This business of *not growing* was a whole lot better than *growing*. But it didn't bring in enough to keep a family, so they turned to the W.P.A.

The Locke, Stricklyn, Juneaux triumvirate and the Simonsons were the only ones not to turn to relief. The first family went logging, the second into strawberry and cranberry production, the third to work in town in a feed mill. The Simonsons scattered into all kinds of work.

Resettlement, Squatting, Rehabilitation. Between the early foreclosures and the more general exodus a few years later, there started a little wave of resettlement. Raymond Carlson built a neat little log cottage down against the swamp, his brother built a little house on the forty north of Lockes. Ed Sorenson built a nice log home at the mailbox corners and the old Carlson couple, when evicted from their farm, built across the road from him. Peter Carlson built on the other corner. What had previously been merely a cluster of mailboxes at a "T" in the road now came to be called "Little Norway." Art Sorenson built a little cabin a few yards from his mother's

[11] Locke's cows brought an average of $35.00 when he sold out in 1935. Three of these were registered Holsteins.

house; Simonsons moved farther into the woods; Blacky Goodman, who married the oldest Sorenson girl, built at the edge of the community, just east of Juneaux. All these homes, save that of the senior Carlsons, were built by young married couples, the second generation of the original families. None of them cleared any land for farming, other than a few square yards for garden. Their source of income was the W.P.A. All these houses are now occupied, either by the people who built them, or in two cases, by other couples who grew up in the community.

Further south in the Rather, Wellyn, Martin cluster of farms a different type of settlement took place. Squatters moved into the old Rather house and also later into Dave Rather's newer cottage. William Locke's half-completed house harbored another family. Wellyn's old house, still another. All these farms—and presumably the houses with them—had already been purchased by the government.

The community's experience with the two "Rather" houses well illustrates this "squatter" type of resettlement. Clarence Rather had built the house in 1922, but hadn't completed it beyond the tarpaper and rough hemlock flooring stage. The house remained empty during the years 1926-31, while Rather was in Arkansas. The farm mortgage had been foreclosed by its absentee owner. When Rather returned from Arkansas he lived in it briefly, and then moved nearer Seeforth, spending the winters in logging camps.

Rather's son moved into the house, bringing with him all his wife's family who had come with him from Arkansas. Young Rather would work, his in-laws wouldn't, so after about two years he and his wife left in the middle of the night, leaving his in-laws—four grown boys, three girls and two old folks—without means of support, except by working. Disgusted by this show of northern inhospitality, the Searles returned to Arkansas.

The house then filled up with another family, the Casners. They lived entirely on W.P.A. until the oldest son married a Rather girl, when he went to work in the woods for Dave Rather.

The other Rather house was built by Clarence's oldest son, Dave, in 1931, on a forty of land across the road from Wellyn's old farm. He cleared about 10 acres for farming, using the place principally for a sawmill site. In 1935 he sold the farm to the government under the land purchase program. Very shortly thereafter, the Casner family moved into the house, having left the elder Rather's house to one of their recently married daughters. Three or four years later the town chairman moved this second house onto a piece of land adjoining the U. S. highway. The town respected the Casner's "squatter's rights" and donated the moving expense, the house, and the little piece of land to the family. Asked if it wouldn't have been cheaper to evict the people and tear or burn down the house, the chairman agreed. "But," said he, "they have to live somewhere." They would somehow find a place and settle and, in all likelihood, it would be isolated. So the move seemed expeditious. It was also much easier to execute than an eviction. "The government made its big mistake," he contended, "when it didn't destroy the house after buying the land."

The third type of resettlement, of the Locke and Stricklyn farms, was carried on under the auspices of the government's "rehabilitation" program and will be discussed later.

The Present. There is now only one operating farm in the entire Severson community. This farm has not been in

continuous operation, but has been planted in crops for the last three years. Whether it will continue to be farmed in the future, when the seasons are less favorable and prices are more nearly normal, cannot be predicted.

The road is now impassable by automobile from Stricklyn's old farm south. The logging roads which served as an excellent footpath intercommunication system have grown up into tall brush.[12] The meadows, where once the farmers plowed and planted, are covered with scattered stands of young white and Norway pines, holding forth the one promise of better things to come. The uncultivated cutover has grown up into brush even more impenetrable than before. The few small stands of timber left standing 25 years ago are gone. So, too, is the merchantable second growth. The brush has closed in on most of the little grassy knolls, so that even the slight grazing value of the land is lost. Effective fire prevention has restricted the reseeding of jack pine on the sandier lands.

The snowshoe rabbit, which abounded in countless numbers, has become virtually extinct, following an epidemic starting in 1933. According to the Conservation Commission, deer are much more plentiful now than when the farmers lived there. Local residents are inclined to doubt this claim. In any event, the much more intensive enforcement of the game laws has effectively removed venison as a resource of the community.[13]

III.—Public Programs

Generally speaking, social scientists may not perform experiments—the costs are too high. Prohibitive money costs are involved in any large-scale attempt to drastically and rapidly redirect the course of events, merely for the purpose of studying the operation-outcome relationships introduced into the pattern of human affairs, often outweighing the immediately foreseeable benefits to be gained by the experiment. For these reasons social experiments are usually made in a democracy only when the immediate outcome may be expected to create social values, or to prevent their disintegration in the press of social adjustment. Thus, social experiments are not conducted by social scientists for the express purpose of increasing knowledge (as is done in the physical sciences) but by public administrators for the attainment of public ends.[14] Social scientists

[12] Strange, how these should remain grassy and free from brush for 35 years and then grow up into heavy undergrowth in 10 years after the community disintegrated.

[13] One often hears reference to wild game as a "resource of the north." As a resource, however, it is completely unique in the economic sense. Any other resource is distributed through the marketing institutions, which directly return a part of the market value of the resource to the place of its origin. Game is distributed through the institution of the state government, which spasmodically opens the resource to a catch-as-catch-can-harvesting by persons from all corners of the state and country. Thus, the only direct recipient of the "market value" of this resource is the state which receives the license fee, and the hunters who get deer, most of whom live outside the area. The indirect income from deer created by the expenditures of outside hunters is relatively slight and does not affect any appreciable numbers of rural families. Conservation policy has followed the trend toward more frequent open seasons and more careful enforcement of laws against hunting out of season; preventing the local residents from realizing any benefit from it. The annual slaughter concentrated in from five to ten days, and participated in by thousands of hunters annually, reduces the probability of a local person's getting a deer to a minimum. It is easy to underestimate the importance to the natives of this loss of venison. The farmers of the Severson community—before 1932—consumed an average of probably six deer per family per year. This much is certain: deer and snowshoe rabbits together provided more than one-half of the farmers' meat, other than chicken. Right or wrong, it is not difficult to understand local people's resentment of the Conservation Department in permitting annual wholesale slaughter and exportation of what they consider to be their rightful property.

[14] A word of caution is perhaps necessary at this point. The evaluations of the various public programs which follow refer entirely to the way these programs worked out *in this particular northern Wisconsin community*. They represent a combination of the local residents' opinions and the writer's analysis—both being objectified solely in terms of the experiences of the community in question. No generalizations from the success or failure of any of these programs in this community to the success or failure of the program *as a whole* is intended or should be made—except as the over-all experiences of this community are representative of experience elsewhere. Certain broad insights may be gained, however, especially with respect to the difficulties of the centralized administering of public programs, which necessarily become involved in the discrete and disparate experiences of local social units.

are therefore limited to a study of other persons' experiments, set up not for the purpose of experimentation but to improve human affairs. Commonly, public programs are addressed to such general problems, and their effects are so diffuse and complex as to make determination of the means-consequences relationships impossible. Too frequently, also, analysis is conducted in terms of *a priori* criteria or assumed ends, without any genuine reference to the specific situations or social processes necessary to the formulation of any warranted inferences from the final observations of the results.

Fortunately, from the standpoint of inquiry, the "Great Depression" introduced and necessitated a series of social experiments, in which the Severson community was a participant. The foregoing brief review of some aspects of the processes of the community enables one to relate these experiments (henceforth, "Public Programs") to the relations within the local social processes.

Rehabilitation. About two years after having been abandoned by their original owners, the Locke and Stricklyn farms were resettled by the rehabilitation program of the Resettlement Administration.[15] By granting financial aid it helped the farmers to be "rehabilitated," buy cows, machinery, work stock, and repair fences and buildings. Understandably, perhaps, these newly converted farmers could not make crops grow where the earlier farmers had failed. Without the experience and familiarity which comes from twenty years' hard work on the same farm, with all the fields now completely overrun with the invincible quack grass, with a heavy load of debt incurred in the purchase of operating equipment and livestock—in short, with the "going concern" value of the farms forfeited[16]—these families were asked to make their way on farms which had failed to support their previous owners. Moreover, for little or much it might signify, these families had been selected because, in the local program administrator's opinion, they needed rehabilitation. Skeptics raised their eyebrows; neighbors expressed their sympathies.

The first family on Locke's farm lasted one year, and then gave up. Their livestock and equipment, surrendered to the government by failure to pay the debt, were transferred to a second family. This second farmer stayed two years and then managed by what he called a stroke of luck to leave the farm without losing much money. The price of cattle went up sharply for a few months, and he chose that time to sell out.

Stricklyn's farm was similarly resettled. This "rehabilitation" family stayed on the farm nearly three years; the father made $60 a month by transporting children to the Seeforth school three miles away (three of the eight children he transported were his own).[17] The school board gave the "transporting" job to another man, and the farmer decided that other pastures were greener. It is not known whether or not the government recovered the money he owed; the local merchants didn't. Before another family could be found to be resettled on the Stricklyn farm, young Stricklyn made a deal with the Federal Land Bank to repurchase it for himself.

[15] It is recognized, of course, that the performance of this program, as of all others reported in this paper, is probably not too typical of the program as a whole. A good deal of the success or failure of the program turned upon the discretion of the local administrator, who had to have good judgment both with respect to the human and the physical side of his problem.

[16] See, for example, section on "Going Concern Value" in Parsons and Waples, *Keeping the Farm in the Family*, Wis. Expt. Sta. Bul. 157, September 1945, p. 5.

[17] It had cost the town over $20 a month for about 25 months just to transport the children of this "rehabilitated" farmer to school. In addition, of course, were the pro-rated expenses of operating the school. The town had succeeded in collecting its share of the taxes (total taxes amounted to about $30 per year) as they were assured by the F.S.A.

At this time the town chairman decided to spend $250 of the town's money to retire the farm permanently from town expenditures.[18]

It is probably sufficient here to point out, with reference to the "rehabilitation" program that, whereas the increasing disintegration of the community's economic base called for an abandonment of the community for habitation, the program resulted directly in the retardation of this adjustment. With obvious disregard for the one legitimate source of knowledge (the experiences of the farmers who had lived there before) as to the type of outcome that might be expected, the program was probably foredoomed to failure. Had it succeeded in creating a means of livelihood for the particular families involved, there would still have remained the question as to whether the public loss through perpetuation of isolated settlement might not have more than offset the gains to the individual families. As it happened, of course, this did not become an item for appraisal.

The Dam, the Fill and the Hill. Most of the public expenditures in the Severson community by work relief programs were made on a dam, a fill and a hill.[19] *The dam*, built largely from P.W.A. funds, created the backwaters on the Tohawchee River, to be known later as "Lake Hanson." Although a little south of the community proper, it had a direct effect upon the community. It eventuated in a lake about nine miles in length and up to two miles wide, with many hundreds, if not thousands of available lots for summer recreation. Although the lake is not exactly ideal for recreation purposes—muddy bottom, boggy beaches, and surrounded by swamps—it represents an extreme improvement on the use of this otherwise worthless land. Only three property owners had to be reimbursed, and only one of these properties, a summer home on a private lake which was overflown by the newly-formed backwaters, was in a desirable use at the time. The other two settlers who were bought out represented perhaps two of the worst cases of isolated settlement in northern Wisconsin. Daw, the more isolated of the two, had but recently purchased a forty with a shack on it, three miles from the nearest town road, nearly four miles from the nearest neighbor. Even these *neighbors* were considered so isolated that their farms were later bought under the government land purchase program. He had demanded that the town make his road passable, and the town had begun grading by the time he was finally bought out. He had five children and was paid for transporting three of them 5½ miles to school. The other settler was a backwoods character who lived in a little log cabin near the river, on a small but regular income from a private source.

There appears to be little local criticism, and actually a great deal of acclaim, for this program. Geared to implementing an imminent and desirable shift in the use of the land involved—out of agriculture and squatting, into recreation—it was executed at minimum cost.[20] The

[18] After 20 years of hard work, the Stricklyns lost this farm to the Federal Land Bank in 1936, on an original mortgage of $2600. After having, at that time, turned down an offer of $1000 for the farm, the Land Bank finally sold it to Stricklyn for $250, following several years of negotiations around successively smaller figures. The town chairman, learning of this repurchase and fearful of a resettlement of the farm, bought the land from Stricklyn for $250 on a deal that returned title to Stricklyn, but covenanted to restrict the land against settlement by any family and against any claims upon the town for roads or schools. Since Stricklyn wanted the land only for the lumber in the buildings and pasture for his sheep he was well satisfied with a deal that gave him these buildings and the pasture for a zero cash outlay. The town officials are also happy for obvious reasons.

[19] Representing the Public Works Administration, the Civil Works Administration and the Works Progress Administration, respectively.

[20] Minimum cost, partly, because some form of relief had to be provided to the workers, and the alternative uses (opportunity costs) of the labor was so low.

community was much better off because of the results of this program.

The fill represented the total accomplishments of the C.W.A. Farmers were paid the then unheard of wage of 50 cents per hour for a man, $1.00 an hour for man and team.[21] Most of the winter of 1933-34 was spent in hauling frozen clumps of dirt, gravel and stone from the hill above down into the fill across the Tohawchee River bottom. This stretch of road connected the southern end of the Severson community with another community to the southwest. As it was considerably farther to town around this road, farmers very rarely used it. It was, however, the mail route, and so the mailman traveled it once each weekday.

Building *the fill* was a major construction job. Pay roll records show an average of about 45 men and eight teams for four-and-one-half months during that winter. A nice looking fill resulted; four feet high, wide enough to accommodate two cars and three-eighths of a mile long. It took a year for *the fill* to settle, as it had been built from frozen blocks of dirt and laid on frozen, swampy land, and so the mailman took a roundabout route that year. Then he got to use the fill a year or two before the Dam was completed and its waters backed up over the road.

Little can be said in support of this program. Its net accomplishments totaled exactly zero except, of course, as a mechanism for distributing dole. Workers and foremen were aware of the plans for building the dam, and so realized the futility of their work. However, they did not wish to have the subject brought up, as the project had been "approved" and abandonment of the project might have meant the loss of their job and their means of livelihood.[22]

Even had it not been for the Hanson Dam, it would have been much less costly to have bought out the only settler who lived on the road, and to have rearranged the mail route when the road finally became impassable. This would have at least accomplished the removal of one badly isolated settler, and left plenty of money for the constructive employment of relief labor.

The dam and *the fill* represent two extremes in the use of work-relief funds; opposite in accomplishments because one was designed in accordance with reasonable alternatives created by the processes of adjustment in the community, while the other ignored the local situation and so its contributions were negated by future events. *The hill*, which characterized the contribution of the W.P.A., was more akin to the fill than to the dam in this respect. Although not so rapidly, nor at first quite so obviously, the succession of events then taking place clearly indicated the futility of this effort. Off and on for about three years the W.P.A. crew tried to reduce the stubborn hill separating the southern Severson farmers from the main highway. *The hill* was made entirely of coarse gravel, which lay so loosely that even after three years' work a truck with a load could not climb it. Few tried it anyway, as most traffic was to and from the county seat, to which city the south road was the shortest and best route. The rest of the W.P.A. funds were spent on doctoring up the road, straightening out a few curves, cutting away the brush, leveling off the hills.

Virtually all these roads are now abandoned; one decade witnessed the com-

[21] The town was at that time paying 35 cents per hour for a man *and* team for snowplowing the roads.

[22] One fact, important to the failure of W.P.A. projects to fit the needs of the community was the almost inevitable emphasis upon projects having immediate results easily demonstrable "on paper." Local committeemen felt (rightly, no doubt) that the most important qualification of any proposed project be that it get approved, so that the money would flow into the community. This automatically threw the emphasis upon projects directed toward simple objectives that would seem practical to someone who knew nothing about the peculiar characteristics of the community in question.

plete disappearance of any utility created by the expenditure of W.P.A. funds. Like the C.W.A. its one accomplishment was as a dole; its accomplishments in retarding the voluntary abandonment of the community created negative rather than positive values.

There can be no question of the need, at that time, for some form of relief for residents of the area. Starvation was probably the only alternative. Had the tremendous expenditure of funds and labor been spent in the direction dictated by an analysis of the flow of events, much good might have been accomplished. As it was, *the fill* and *the hill* make mockery of the disparity between public purpose and public action.

The National Recovery Administration. Immediately upon being notified of the wage codes and other provisions of the N.R.A., the three loggers who were employing men in the community were forced completely to discontinue operations, thus placing the few employed men in the community upon the public's care. Fortunately for the community, these loggers came to believe that the N.R.A.'s bark was worse than its bite, and decided to ignore it some time before the U. S. Supreme Court decided that it was right that they should do so.

Civilian Conservation Corps. There were no C.C.C. camps in the immediate community, although there was one a few miles away. None of the local people seem to question the validity of the C.C.C. idea. Its aims were certainly in the right direction in respect to the desirable adjustments of land use in the community. Local residents felt quite strongly, however, about a few shortcomings in the general administration of the corps. Because the program is one that has considerable merit for the entire cutover area, it is perhaps important that we give these shortcomings attention.

First, local people believe that the corps should have concentrated on what was (in that area) its real function—the reestablishment of forests. Three principal jobs were involved in this function: tree planting, disease control and fire control. Residents believe that probably not more than one third of the total man-days were spent on these three jobs; the rest was overhead. Of course, some of this was necessary; but much of it was a social loss.

Second, the corps should have better utilized the local intelligence on the ways of the woods. Many aspects of forestry vary extremely from place to place, and little attempt was made to utilize local knowledge, such as might have been provided by local advisory committees, to supplement the technical training of the foresters which often didn't apply to the particular conditions of the locality. As a consequence, the foresters frequently made themselves ridiculous in the eyes of the natives, and thus lost much of their valuable support.

Third, the corps suffered from the lack of well trained personnel. The obvious incapability of many of the foresters amused, but also alienated local people who, after all, had a concern for the future of forestry in their community. Residents almost unanimously believe that the corps should have been freed entirely from army control and jurisdiction. Men with spurs on their boot heels have no place in the forests. Much of the derision cast in the direction of the corps was due to this tie-in with the army. Complete separation of forestry and reforestation work from game-law enforcement would also have eliminated much of the hostility of the local people.

Fourth, and most important of all, perhaps, the general reforestation effort should have been integrated with a comprehensive research program. Most

of the obstacles to effective reforestation are physical, and center around the problems of propagation, mensuration and disease control. Hand or semi-mechanized planting is quite successful, but very slow and expensive. Nature's processes for reforestation operate through cycles of worthless cover and thus are intolerably slow. The great need appears to be for comprehensive research on the problems of speeding these natural processes by a less expensive means than tree planting.

Federal Land Purchase. One of the programs actively working toward a land use adjustment in the Severson community was the land purchase program of the federal government. This program was passed from one to another of five federal agencies before it was finally abandoned in 1940. Although important changes in policy and administration accompanied each transfer between agencies, its general purpose remained the same: that of relieving severe cases of isolated, submarginal farms by direct purchase. Under this program, a total of 416 farms were purchased in Wisconsin, five of them in the Severson community.

These farms were the five most isolated in the community. The accomplishments of the program must be reckoned almost solely in terms of the elimination of these isolated holdings, as far as these five particular families were concerned, as it did not noticeably change either their means or standards of living. One family had used their farm solely for residence purposes, and had made their livelihood by logging. The other four families received virtually their entire income from public relief. After selling their farms the families continued to earn their livelihood in the same way as before.

At the time of the actual purchasing, local interest in this program was acute. A common comment was that the program was the unabashed admission of the ultimate communistic aspirations of the government. The government's obvious intentions, so the people believed, was to get ownership of all the land, so that it could with impunity dictate to the people. Much of this trepidation subsided when the people finally learned that purchase was purely for the purpose of eliminating isolation; that they could understand, and it made sense.

All in all, this was probably one of the more successful programs operating directly in the community. It certainly accomplished something which has won the support of the natives, and which can be reckoned in dollars and cents. Not conceived as a direct relief measure, it functioned as such by placing cash in the hands of people who needed it. Unlike the other relief programs, however, it was so in mesh with the transition adjustments of the community that its accomplishments were permanent. Too costly, perhaps, to be used on a wide scale, it served well as a supplement to other less costly means of readjustment in situations where they were inadequate. According to the natives, its greatest shortcoming lay in the tardiness of its follow-through —the actual removal of the inhabitants, the disposal of buildings (to guard against future squatting) and the readjustment of the land to a positive, suitable use.

Agricultural Adjustment Administration. The chief value of this program was indicated earlier; it enabled the farmers to realize an income from their land. As far as soil conservation was concerned, its contribution was nil, as there was little if anything left to conserve, and probably no public interest in conserving it. Actually, it is unlikely that much fertility was conserved, as the land would have grown back to grasses anyway. It did not, of

course, restrict production on the farms, as virtually all the land had been abandoned for cropping purposes before the program took much hold in the community.

War. It is perhaps not technically correct to speak of the war as a government program. Nevertheless, a brief glance at the impact of the war upon this community in transition provides some useful insight into possibilities for future action. One of the common answers to area problems is that theirs is merely a segment of the problem of the entire economy. The argument follows that the answer to such problems is suitable employment alternatives elsewhere, which automatically breaks the dams that make the area stagnate. Since it would seem likely that the rearrangement of people's lives and habitat caused by the war would increase mobility and lubricate their movement as "economic men," the reaction of the Severson community to the war tends to throw this argument into question.

Although World War II severely disrupted the living patterns of the community inhabitants, the essential pattern was restored at the war's end. This is shown in the following data which include all the men between the ages of 17 and 40 living in the Severson and the near-by Blake communities when the war broke out.

A. Of fourteen men who were between 17 and 30 years old when the war began: *four* entered armed service and were killed in action, *one* entered armed service and returned to another community, *seven* entered armed service and returned to the same work as before entering, *two* stayed home.

B. Of twelve men who were between 30 and 40 years old when the war began: *four* entered armed service and returned to the same work as before entering, *four* went away to work in industry and returned home to do the same work as before, *one* went away to work in industry and did not return to home community, *three* stayed home in the same type of work as before the war.

In brief, only one out of ten men under 30 years old (excluding those killed in service) and one out of twelve men between 30 and 40 years old changed their residence and /or their occupation during the war period.

A less exact, but nevertheless quite complete count of all men leaving from the entire Seeforth trade center community gave approximately the same results as the above figures indicate.

These figures, of course, tell of only one evidence of the impact of the war, viz., the relocation of people living in the community. Slight as was this effect, it was probably as great as any other. Little change in the residence or occupational pattern of the community occurred as a consequence of the war.

Minor Programs. Several minor activities were directed toward easing the adjustment out of an agricultural and residential use of the Severson community. Some of these accomplished more—and in the right direction—than did the most expensive government programs.

The activity of the Town Chairman in restricting the use of Stricklyn's land through granting monetary recompense, and in moving the Dave Rather house out onto the highway was discussed earlier. At very little expense, these two minor public expenditures probably did as much as any public program actually to eliminate the isolated residence problem in the community.

Another public activity conducted at the local level was the consolidation of the Severson School with the Seeforth School. This did not result in any great savings at the time, as the transporter was paid the same salary as the teacher of the Severson School had received the preceding year. However, the local population was fast dwindling, only nine children would have

been in attendance in the Severson School the year following consolidation (1932). By the next year the number had dwindled to six. Consolidation marked a step in the move toward abandonment of the community and so was in gear with its necessary adjustments. The passage of time has shown its merit as a course of action elected by the local people.[23]

IV.—Hypotheses

Several hypotheses emerge from the foregoing examination of the economic processes operating in the Severson community during the past decades. The *conclusions* of the study have reference only to the specific problems of the community and have already been discussed. But since this study was principally a preresearch effort, the propositions emerging from it take the form of *hypotheses* rather than of conclusions, and may have their chief value in future researches on some of the general issues in the formulation and administration of public policies which inevitably become involved in highly localized circumstances. The general hypotheses, in addition to the specific propositions forming the body of the discussion, which appear to the writer to give most promise in the formulation of the problem for future research include the following:

1. Although a part of the total economy anatomically many small social-economic units, such as the Severson community, are functionally discrete units to the extent that the factors *strategic to* the specific problematic situations in these units are not identical with the factors strategic to the desirable functioning of the economy as a whole.

2. Economic objectives unassailable from the standpoint of general public welfare (and in the long run) may not correspond with the welfare of persons in a particular area. It is not always, perhaps, the ends which are in conflict, but the more immediate effects of the means by which the realization of these ends are attempted.

3. Growing out of the above hypotheses, but focusing upon the organizational aspect of resolving these local problems, social control mechanisms should: (a) formulate their problems concisely in terms of local situations; or (b), where that is impossible or unfeasible, at least make utmost use of local intelligence in either, or both, formulation of the policies and in their local administration.

Some more specific hypotheses, having reference to the more particular problems of the Northern Lake States cutover, include the following:

1. The relative stability of the population in the face of the drastic instability and transition of the economic base of the Severson community defines the problem for analysis, in this case at least, as being largely containable within area boundaries. Although this gives hope for solution in that the problem may be defined into solvable dimensions, it at the same time throws into sharp question proposals based upon an assumption of the omnipotent healing powers of full employment. It also indicates that the basic theoretical analytical categories for solving such economic problems must deal with the strategic underlying institutional relationships as well as (and in fact must be joined with) such traditional theoretical concepts as the conditions of equilibria in the goods and services and the factors markets.

2. The characteristic social and economic organization of the Severson community—and of most communities in the "cutover"—is largely defined by the fact that it was built upon agriculture as its principal economic base. Most programs for rehabilitating the community call for the substitution of forestry for agriculture as the principal economic resource. From the standpoint of the social and economic institutions of the community, transformation of the base to forestry is not a "reversion to normal" but a tremendous transition with perhaps very little precedent

[23] It must not be thought that the choice was unanimous; the entire community of families reacted very vigorously toward the proposal, for and against in about equal proportions. Feelings were more bitter over this issue than over any on which the people had to make a decision. An earlier attempt at consolidation was defeated by the fact that it would have meant the loss of a teaching job by a daughter of one member of the school board.

in the history of the country, thus accentuating the need for care and effort in analyzing probable consequences of alternative courses of action aimed at this objective.

3. The limiting factors in the path of a solution to the problems of the area are largely physical, or, even more commonly, biological. Our inability to harness the ecological processes by which nature strives to maintain stability through cyclical successions of life forms points to the necessity, from the side of economic research, for a thoroughgoing examination of techniques now available and amenable to adaptation in the area.

Reports and Comments

On the Concentric-Circle Theory of Urban Growth

THE concentric-circle theory of urban growth, for a while universally accepted, has in recent years been challenged by several authors, including this writer, who have emphasized various other factors which may modify or even destroy this simple scheme.

Valuable material for further exploration of this question has been supplied by a recent U. S. Census publication on metropolitan districts.[1] This study has defined, for the central cities of 16 selected metropolitan districts, "groups of census tracts lying within given distances from center of city" and has calculated the population change 1930-40 for each group.[2] The results illustrate the trend from the central to the peripheral sections of these cities. In Philadelphia, for instance, all groups within a five-mile circle from the city center—which in 1930 had contained 80% of the city population—showed an absolute and relative decline in population, though this decline was substantial only within two miles from the city center. (Table II, line 1) The zones between the five- and eight-mile circles showed increases mounting rapidly towards the periphery. However, beyond the 8-mile circle the increase was slower.

The concentric zones established by this Census study have been used by the Philadelphia City Planning Commission as a convenient basis to correlate distance from the city center with eleven other series of data which had been assembled by the Commission staff in the course of its studies. (Table II, lines 2-12) It was realized that Philadelphia is not an ideal test case for the concentric-circle theory. The shape of the city is very irregular, the "city center" is very excentric both to the area and to the population of the city, with distances from the center to the city line varying from 1 to 15 miles.[3] The city is divided by the fall line into two radically different topographic zones, the coastal plain and the piedmont. Finally, the city contains a number of century-old, formerly independent communities as well as very important centers of employment outside of the city core. Considerable deviations from the norm were therefore expected. All the more remarkable is the extreme consistency shown for all twelve series in zones 2 to 8. The first zone, the city core within a mile from City Hall, stands out as different, as do also the not-fully-urbanized two zones beyond the the eight-mile circle. All 12 series are presented in Table II. The main results may be summarized as follows.

Population density decreases with complete regularity from the second zone to the periphery, whichever of three commonly-used definitions of density[4] is applied. (Table II, lines 2, 3, and 4) Under all three definitions the 4-mile circle divides the areas with a density above the city average from those with less-than-average density. Within the one-mile circle the density is slightly lower than in the area between 1 and 2 miles. This may not be significant in the case of over-all densities, because of the predominance of non-residential uses in the central area. The gross residential density figure may also be questioned because the extreme intermingling of uses in the city center makes any definition of gross residential areas rather arbitrary. However, the figure for net residential density is significant. If anything, it would tend to overstate the area and under-

[1] Warren S. Thompson, *Population, the Growth of Metropolitan Districts in the United States, 1900-1940* (Washington, U. S. Government Printing Office: 1947).

[2] *Op. cit.*, p. 9 and p. 50.

[3] Area, total population, and non-institutional population for ten concentric groups of census tracts are presented in Table No. I.

[4] "Overall" density relates total population to total area. "Residental" densities relate non-institutional population to residential area. "Gross" residential area denotes the area used predominantly for residence, including streets, vacant lots, and auxiliary and scattered non-residential uses. "Net" residential area denotes the parcels occupied by residences.

TABLE I—AREA, TOTAL POPULATION, AND NON-INSTITUTIONAL POPULATION FOR GROUPS OF CENSUS TRACTS LYING WITHIN SPECIFIED DISTANCES FROM CITY CENTER: PHILADELPHIA, PA., 1940*.

CLASSIFICATIONS	Within 1 Mile	1–2 Miles	2–3 Miles	3–4 Miles	4–5 Miles	5–6 Miles	6–7 Milrs	7–8 Miles	8–9 Miles	9 Miles and Over	CITY TOTAL
Area (*acres*)	2,026	4,942	7,447	13,783	10,309	10,936	7,943	6,877	4,177	17,044	85,484
Population, 1940	96,100	366,873	405,413	412,785	207,750	205,438	137,132	58,526	27,923	13,394	1,931,334
Non-Institutional Population, 1940	95,723	360,627	404,505	410,153	204,864	204,214	136,246	58,220	24,715	7,295	1,906,562
Percent of Total	5.0	18.9	21.3	21.5	10.7	10.7	7.1	3.1	1.3	0.4	100.0
Cumulative Percent	5.0	23.9	45.2	66.7	77.4	88.1	95.2	98.3	99.6	100.0	

Source:—For total population, U. S. Census, 1940. For area and non-institutional population, Philadelphia City Planning Commission.

state the density because it does not include the area of hotels but includes part of their population. This factor, together with a concentration of apartment towers would lead to the expectation of a very high net density in the first zone. However, these factors are apparently counter-balanced by abnormally small family size (see Table II, line 5) and by the presence of more expensive, and presumably larger dwelling units (see Table II, lines 6 and 7).

While the average size of household[5] in the central city is only 3.2, it jumps to 3.9 in the second zone and declines very gradually to 3.7 in the outer urban belt, 6 to 8 miles from the center, to rise steeply to 4.0 and 4.4 in the semi-rural area beyond the 8-mile circle.

The average value of dwelling units (Table II, line 6, and graph) shows a consistent rise from the 2-mile to the 8-mile circle, with a drop beyond that line and with high values in the city center.[6] Average values of owner-occupied dwelling units follow the same general pattern with minor deviations which in part are due to the anomaly referred to in footnote 6. The value of owner-occupied units is substantially higher than the value of *all* units in every one of the ten zones; the difference is most marked in the city center. As was the case with population density, the 4-mile circle divides the areas with values below city average (except for the high-value city center) from those above city average; this holds true for owner-occupied as well as for *all* units.

The percentage of owner-occupancy (Table II, line 8) rises consistently from the center towards the 8-mile circle, from 8.7% to 61.8%. Interestingly enough, it drops again slightly, to 60.1% and 54.6%, in the semi-rural area beyond this line. The values above and below city average, respectively, are divided by the 3-mile circle.

The percentage of new dwelling units (built since 1900) rises regularly (with minor deviation in the 6th zone) from 10.8% within 1 mile to a peak of 86% along the 8-mile circle, but drops to 57.1% in the area beyond the 9-mile circle (Table II, line 9).

[5] The household or "occupied dwelling unit," as the 1940 census calls it, may include up to 9 lodgers or boarders; only units with 10 or more lodgers are defined as "rooming houses."

[6] This value is assumed to be 100 times the "contract or estimated monthly rent" given by the U. S. Census. The value of owner-occupied dwelling units was listed separately by the Census. The two figures are not always reconcilable.

TABLE II—DATA FOR GROUPS OF CENSUS TRACTS LYING WITHIN SPECIFIED DISTANCES FROM CITY CENTER: PHILADELPHIA, PA., 1940†

CLASSIFICATIONS	Within 1 Mile	1–2 Miles	2–3 Miles	3–4 Miles	4–5 Miles	5–6 Miles	6–7 Miles	7–8 Miles	8–9 Miles	9 Miles and Over	City AVERAGE
1. Percent of population increase, 1930–1940	—10.5	—8.9	—1.8	—2.3	—2.4	2.5	19.7	35.1	18.0	15.9	—1.0
2. Overall density, 1940 (*persons per acre*)	47.4	74.2	54.4	29.9	20.2	18.8	17.3	8.5	6.7	0.8	22.6
3. Gross residential density, 1940 (*persons per acre*)*	99.2	101.0	93.7	72.5	47.7	35.7	32.0	20.4	17.2	5.1	55.2
4. Net residential density, 1940.. (*persons per acre*)*	173.3	196.1	177.4	138.3	85.6	67.9	58.3	36.0	33.1	8.5	102.5
5. Persons per occupied dwelling unit, 1940	3.2	3.9	3.8	3.8	3.8	3.8	3.7	3.7	4.0	4.4	3.8
6. Average value of dwelling unit 1940, (*in $'s*)	3,147	2,406	2,664	3,017	3,645	3,667	4,216	4,621	4,153	3,961	3,122
7. Average value of owner-occupied dwelling units, 1940 (*in $'s*)	5,508	3,015	2,947	3,362	4,184	4,358	5,105	5,539	5,277	6,405	3,866
8. Owner-occupied dwelling units as % of all dwelling units, 1940	8.7	24.4	31.0	40.2	45.8	46.6	52.3	61.8	60.1	54.6	36.5
9. % of all dwelling units built since 1900, 1940	10.8	19.5	36.8	72.0	78.4	69.8	84.0	86.1	86.0	57.1	52.8
10. Labor force as % of population 1940	54.9	45.3	45.4	45.0	46.7	45.2	43.4	44.3	43.9	45.6	46.0
11. Sex ratio—1940	103.7	98.9	94.0	93.7	94.4	92.6	92.6	94.3	109.5	90.0	95.3
12. Workers employed in mfg. per acre overall area, 1943	28.4	8.2	7.1	5.3	5.5	2.3	1.2	1.1	0.7	0.4	3.9

† *Source*:—For grouping of census tracts, Scripps Foundation for Research in Population Problems. Miami University, Oxford, Ohio.
For data, previous Philadelphia City Planning Commission studies based on data from 1940 census and other sources.
* Exclusive of population in institutions.

In addition to the foregoing data on population and housing three series have been constructed in an attempt to shed light on the correlation between employment and population distribution.

The percentage of the total population in the labor force (Table II, line 10) is 20% higher among the population living within the one-mile circle than it is for the city as a whole. This is probably related to the abnormally small size of households in the city center (compare Table II, line 5). The variations between the remaining zones are slight; however, the 6- to 9-mile belt stands out as the economically privileged area of the city with less than 45% of the population in the labor force, more than 80% of all dwelling units built since 1900, and average values for *all* dwelling units of over 4000 and for owner-occupied units of over 5000.

The figures for the sex ratio show similar abnormally high values for the city center as do the labor force percentages. (The high value in zone 9 is due to the presence of several large institutions housing male inmates).

It would have been highly desirable to study the distribution of the labor force not only by residence, but also by place of employment. However, data had been assembled only for manufacturing employment in 1943. The number of workers so employed in each concentric zone has been related to the total area of the zone. *The resultant density of industrial employment* (Table II, line 12) shows a rapid and completely regular decline from 28.4% workers per acre in zone 1 to 4.0 workers per acre in zone 10, with the 5-mile circle dividing the area with a density above city average from the lower density area. Considering that the city average for the data based on residence coincided with the 4-mile, and in some cases with the 3-mile circle, it may be tentatively concluded that industrial decentralization has progressed slightly farther than has residential decentralization. At the same time, the high density of manufacturing employment in the central areas of the city is remarkable in view of the fact that in these areas industry has to compete with commercial and residential uses which occupy most of the available land.

Conclusion

Analysis of the twelve series presented herein shows three distinct areas: the small central core within one mile of the city center, the main urban area extending beyond this core to a distance of about 8 miles from the center, and the not fully urbanized fringe beyond this line.

Of the twelve series, three (household size, percentage in labor force, and sex ratio) show no very significant variations outside the central core. Of the remaining 9 series, five (Table II, lines 1, 6, 7, 9, and 10) show a reversal of the trend at the 8-mile line. All 9 series show an extraordinary consistency within the main urban area confirming strongly the dominance of the concentric pattern. The four-mile circle stands out as the line dividing the areas on either side of the city average for five out of nine series, while two are thus divided by the three-mile circle and two (lines 1 and 12, *see above*,) by the 5-mile line. In the densely populated and intensely used older and poorer "below average" section of the city inside the 4-mile circle lived exactly two-thirds of the non-institutional city population in 1940. (*see* Table I.)

In order to understand all implications of the concentric pattern of our cities three more steps are required: (1) Extension of the analysis beyond the political boundaries of the central city to the entire urbanized area. This should be possible after the 1950 census has established census tracts for the entire area of metropolitan districts: (2) A comparison between a number of metropolitan districts: (3) A comparison between consecutive periods. After the 1950 census comparable data for three decades will be available.

It is believed that in the study of the dynamics of urban expansion particular attention should be given to the dividing line between the main urban area and the fringe area which this study has attempted to establish. This line represents the crest of the advancing wave of urban expansion; by tracing it through several decades it should be possible to arrive at exact measurements of the tempo of this movement.

Systematic analysis of data for concentric areas is a hitherto little developed technique which may be of great help in exploring the field of urban morphology.

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(The opinions expressed in this article are the author's and are not necessarily representative of those of the Philadelphia City Planning Commission.)

Metropolitan Districts: Their Areal Relationships

THE nearest approach yet developed to the concept of that population cluster, the center of trade and industry, the natural city, is the metropolitan district.[1] The following study deals with some basic concepts and trends, and with pioneering methodology adapted for testing the standing of any single district.

Spatial interrelationships among natural cities, for the entire United States, possess important elements of constancy at any one time. Trends begin to provide a back drop for economic history as well as for historic geography. Public and private planners should be familiarized with basic or broad criteria over and above those derived from local conditions only. These include trends in the economy of urban land use, effects of disproportionate growth within the natural city, measures of degrees of primacy, and other predictive inferences.

Summarized findings are restated at the beginning of each of the following explanatory discussions.

1. Greater Economy in urban land use occurred before the Automobile Age than during it.

Population and Area, 1910-1940. Group averages were based on population ranges the maximum and minimum within each of which provided 50% variation, starting with 50,000-75,000. The first differences of the logarithms of consecutive geometric averages of maximum and minimum are constant. In data such as population, where relationships are often best expressible with the use of ratios or logarithms, an even spacing among groups, of logarithms of group averages, is visually superior to the usual arithmetic class interval.

Intergroup average relationship of area to population is linear if both are expressed as logarithms. It is of the type $y=ax^b$, or $\log y=\log a+b \log x$, where x is population, y is area, a and b are constant in each Census year, and b exceeds 0 and falls below 1.

With the exception of two groups the 1940 districts required more area than the 1910 districts for the same population, indicating greater economy in the use of land in 1910 than in 1940. The span covers the Automobile Age, and the measure reflects the spreading-out of the populace.

2. Higher population densities are usually associated with larger populations.

Population and Density, 1910-1940. The "universe" of forty-four metropolitan districts existing in 1910 was projected over the period 1910-1940.

Beginning with populations of roughly 1½ millions, an outstanding and widened divergence of densities developed largely in 1920-1930. This points out more sharply the effect of suburban expansion in the Automobile Age.

Higher density was usually associated with larger population. A semilogarithmic linear relationship of the type $x=ab^y$, or $y=a_1+b_1 \log x$, was roughly expressible of 1930 and 1940 relationship of density y to population x. The letters a, b, a_1 and b_1 represent constants in each Census.

The exception to this generalized association was in populations roughly 1½ to 2 million, where additional population was associated in 1930 and 1940 with declines in density. In other words, having reached "bigness," suburbanization was most pronounced in these population sizes.

3. A measure of equilibrial relationship between the central core and the periphery is set up, the Product:Area. From it, overpopulation or underpopulation can be estimated for any given district.

Population and Product:Area, 1940. Product:Area is defined as the product of the area of the central city and the area of the district outside the central city. It measures the influence of both factors interacting upon each other. If the central city were in all cases a true metropolitan core, a logical equilibrial relationship would be expected between the two factors. The group averages to some extent eliminate the effect of the cases where in fact this was not so. When the number of districts comprising a group average was small, as in that dominated by Los Angeles' unusually large area, this was

[1] The metropolitan district, as defined in the 1940 Census, includes a central city of 50,000 and contiguous minor civil subdivisions having not less than 150 persons per square mile. Over a period of time it has no fixed boundary. In *The Growth of Metropolitan Districts in the United States: 1900-1940*, published in 1948 by the U. S. Census, earlier data were made comparable to later data. Decennial area and population statistics were made available for the forty-four districts existing in 1910. Using that source of data, our study examines the entire "universe" of metropolitan districts existing in 1940, and takes into consideration the trend in areal relationships since 1910, the first year of their availability.

less so. The measure, secondly, allows for moderate differences of relationship of the two components: A larger central city area could be associated with a smaller outside area without unduly penalizing the result. Outstanding differences of relationship, or small absolute values, make the product small; this is usually true of small metropolitan districts where pressures to expand central city are less powerful. On the other extreme, both components having large areas, both product and population are large.

The intergroup average relationship of Product:Area to population was closely linear in 1940, expressed in logarithms. The equation for associating the two, assuming neither is an independent variable, is $\log x = .8114561 \log y + 2.252251$, where y is the Product-Area and x is the total population of the district.

Applied to any one metropolitan district, its Product:Area can be substituted for y in the equation. Its theoretical x and actual populations can then be compared. Relative congestion or its opposite, are implied, together with measures of the same. If population of a given district, associated with its Product:-Area, exceeded its theoretical x population, the difference is a measure of its overpopulation, and conversely for a measure of underpopulation. The ratio of actual to theoretical population can be used to compare relative congestion among districts.

4. Higher rate of population increase is usually associated with shorter distance from center to periphery.

Rate of Population Increase, 1930-1940; and Approximate Radius, 1940. Approximate radius is defined by assuming that the area of the metropolitan district is in the shape of a circle with the center corresponding to its one and only dominant core. Everyone knows that this theoretical nicety does not in all respects fit most actual cases. But the approximate radius is an average, itself, for each metropolitan district, of the separate distances from an off-centered core to the pheriphery. Moreover, group averages, and consequently the measure of intergroup average relationship, may conform more closely to the assumptions: (a) A dominant core usually exists; (b) unless prevented by natural barriers land use usually declines in intensity with increased distance from the dominant core. Accordingly the principle of an approximate radius is retained.

Averages were of seven groups classified by rate of population increase, 1930-1940: —5% to 0%, 0% to 5%, etc., with last interval 25% and more, excluding Miami and Corpus Christi to eliminate the excessive influence of their extremely rapid growth on this terminal class interval comprising mostly Western and Southern districts. Cases of decline in population were dominated by unique economic causes. For analysis the two terminal extreme groups were set aside, and the rates of increase, 0% to 20%, were examined comprising 116 of the 140 districts in 1940.

The largest two consecutive groups, together including 74 of the 140 districts, had an average radius of 9.6 miles and rate of population increase of about 5% in 1930-1940, something near the rate of national increase of 7.2%. The next three consecutive higher rate-of-growth groups all had shorter average radius but more rapid population increase. Average for the two lowest-radius groups was 7.4 miles and about 20% population increase. Therefore, excluding the two terminal extreme groups, and covering 80% of the districts, higher rate of population increase was associated with shorter radius.

5. A method is set up for determining the conditions most likely to call for intensified land use, and measures are provided against which to determine the status of any district.

Rate of Population Increase, 1930-1940; and Approximate Radius, 1940. Regression Lines by Population Sizes, 1940. Association of population size with rate of population increase and radius yields interesting results. For this purpose an arithmetic regression line was fitted to rate of increase and radius for each of six population groups. The population class-intervals were selected for the main purpose of determining an average population size beyond which population could increase without radial (and hence areal) expansion. This condition could be defined by the point of intersection of the experimentally-found lines of equal absolute slope, but of slope having opposite signs.

Approximations describing this condition were found in the two population groups, 112,500-375,000 and 375,000-500,000. The "critical" point was a radius of 9.6 miles (about 290 square miles in area), a 52% population increase as a theoretical upper limit, and a population size of approximately 375,000. In other words, extensification of land use was the controlling factor with

population sizes up to 375,000; intensification of land use (and consequent possibilities of congestion) became dominant with larger population sizes.

The orderly differences of slope of the consecutive population-size regression lines shows further logical extension of the principle: The smaller the population, the more extensive was the land use; the larger the population, the more intensive the land use. The most intensive land use occurs logically and in fact in regional primary nuclei (New York, Chicago, Los Angeles and Miami).

For test of a given district having population under 375,000, it is logically suited to net pressure for future extensification of land use if, in comparison with what its population size group indicates, it has a larger population increase or a smaller radius; and conversely for future intensification. For a population over 375,000, a district is logically suited to net pressure for future extensification of land use if, in comparison with what its population size group indicates, it has a smaller population increase or a smaller radius; and conversely for future intensification.

6. Slowdown of population increase outside the central city for most of the districts usually occurred with longer distance from center to periphery, to an absolute limit. For the remaining districts, lack of slowdown was usually associated with economic primacy, a measure of which is provided for any one district.

Population Increase Outside Central City, 1930-1940; and Approximate Radius, 1940. Is distance from the center a cause of retarded growth? Population change outside the central city should sensitively reflect the answer.

For most districts the answer was, yes. One hundred nineteen, or 85% of total number of districts, in seven consecutive groups classed by order of population increase outside of central city (intervals: 0-5,000, ... 30,000-35,000, etc.) showed a very regular and persistent slowdown in population increase with larger radius, to an optimum or asymptotic increase of around 50,000 associated with a radius of around 19.2 miles.

For most of the population gains the answer was, no.[2] Increased numbers of people outside of central cities occurred along with increase in radius, and predominantly without major retardation in population increase. The sixteen districts showing population gains over 35,000 each (including regional primary nuclei) had 59% of total population increase outside central cities: These two groups gave no indication of retardation in peripheral growth. The seven consecutive groups having largest outside population increases, and comprising 89% of total population increase outside central cities, but covering 43% of total number of districts, showed a linear semilogarithmic regression of the type $y=ab^x$, or $\log y=\log a+x \log b$, where y is population increase, x is radius, and a and b are constants. About a 30% average gain in numbers of people living outside of central cities was associated with lengthening of the radius by one mile.

The above two apparently contradictory indications can be reconciled only in the special significance attached to the large population sizes which dominate the two largest population-increase groups. It reflects the more intensive development of satellite commercial and industrial centers in large districts having massive population increases. Evidence of primacy began to accrue approximately after a radius of 12.8 miles and a population increase of 33,000. One measure of the degree of primacy enjoyed by any district is provided by the divergence of its data from the asymptotic curve.

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[2] Characteristics of the group which showed declines in population outside the central city may be revealed by comparison with another group having approximately the same radius:

	Average for Group Showing:	
	Decline	*20,000-30,000 Incr.*
Radius	11.2 mi.	11.1. mi.
Population change (outside)	−4,768	+23,732
Total district population	508,746	456,054
Density outside cen. city	414	465
Density of central city	4,898	7,756

In this comparison, since declines in peripheral population accompanied a much lower density of population in the central city, congestion was definitely not a cause of decline. The causes were definitely not areal, and most probably were economic.

The Sanborn Map as a Source of Land Use Information for City Planning

RELIABLE and up-to-date land use information needed in preparing comprehensive city and regional plans may be obtained in several ways. A well-organized and rapidly-executed field survey is the ideal method. It can at the same time assemble essential social and economic statistics. These projects, however, are expensive and only a few cities can afford their costs. Furthermore, unless some method is found to keep the information current, it becomes less valuable with each passing year. Ultimately a new survey must be made. As a result of this fact many planners have had to rely on other sources of information.

In the case of urban areas the most valuable source of land use information, other than field survey, is the fire insurance map made and published by the Sanborn Map Company. This map is used widely by city planning departments and by public and private organizations interested in details of urban land use. In fact, it is considered indispensable equipment in many offices.

The Sanborn map originally was made for and still is used chiefly by fire insurance companies.[1] Indeed, only about five percent of the company's business is with organizations outside the insurance fraternity. Rather than go to the expense and trouble of evaluating a fire risk by field inspection of a building and its immediate neighborhood, the insurance underwriters and rating bureaus find it more satisfactory to have a highly specialized organization like the Sanborn Company make investigations and then prepare, and correct periodically, a map showing among other things all individual buildings, construction details, and certain water utility installations. In other words, the map gives, in a diagrammatic form, a miniature picture of all buildings and their surroundings, with all the essential information needed to evaluate an insurance risk. No other published map shows such detailed urban land use information as the one made by this company.

Since these maps are made on a scale of fifty feet to the inch they are cut into sheets and bound into volumes—only one small volume in the case of many cities but a score or more volumes for a great metropolis.

The Sanborn maps may or may not cover the entire city. Since the publishers are interested chiefly in insurable values or improvements, their maps cover all built-up sections. On the other hand, the outer portion of a city, if characterized by vacant land and widely scattered buildings, may not be mapped. Industrial plants and other fairly large structures located in these unmapped districts usually are shown as inserts or detachments. As sparsely settled districts are developed with buildings close enough to each other to constitute a fire hazard, the area is mapped and new sheets are added to the bound sets.

The city planner is not usually interested in all the details shown on the fire insurance map. Information pertaining to sprinkler systems, window openings, and elevator shaft construction, for example, is used mostly by insurance companies. The planner needs information on building coverage, the bulk and age of structures, the kinds of land use, and related data. Although this information is more or less complete, it does not meet fully the demands of the city planner. Thus, in evaluating the Sanborn map from the planners' standpoint we must note its shortcomings as well as its many excellent features.

One of the principal features of the map is that it shows in outline form the ground coverage of all buildings true to scale. In most instances, parcel lines are shown. Whether buildings are constructed of brick, stone, or wood is indicated by a different color for each kind of material. For each structure, the map gives the number of stories. Buildings with setbacks show the number of floors to each setback. The larger structures also include the height in feet. Individual buildings are located by reference to street names and numbers.

Inasmuch as fireproof standards may change from time to time, the insurance underwriters want to know when "fireproof" buildings were erected. In view of this, the construction date is given for all fireproof and nearly fireproof buildings but for no other structures except public school buildings of masonry construction. The planner

[1] Mr. R. E. Kellner, manager of the Central Division of the Sanborn Map Company, and Mr. J. A. Vega, assistant manager, courteously furnished the data used in this report.

of course would like to know when all buildings were erected. By using words or in some cases letters that are keyed to the symbol, the map shows in a more or less complete manner the use of virtually every structure.

The Sanborn map does not always differentiate clearly between vacant land and land used for nonstructural purposes. Largely nonstructural uses, such as commercial parking lots and coal and lumber yards, are identified in many cases, but there are numerous exceptions; hence it is difficult to classify much of this property. Most nonstructural parcels in residential areas are vacant or in some cases used for gardens. On the other hand, a manufacturing plant built on only part of a large parcel may or may not use the nonstructural portion of the lot. This land could be vacant or it could be used for storage of materials, for automobile parking, or for other purposes. Sanborn does not give the answer. In preparing a map of vacant industrial land one should designate, when using Sanborn as a source, that this land may be "suitable" for industrial building expansion rather than "available." In spite of these difficulties, the insurance map, when checked against new construction data and field investigations of questionable nonstructural uses, can furnish the necessary information for preparing a usable vacant land map for that part of the city included in the fire insurance survey. Of course, data for those sections of the urban area not mapped by this survey must be secured in other ways. In general, though, these unmapped sections are either vacant or sparsely developed.

Residential structures are identified in a number of ways. Single-family and two-family attached houses are marked by the letter "D." When the dwelling is of more than two stories and has but one family per floor, it is considered a flat building and is labeled "F." Buildings with a common entrance and more than one family per floor are designated "apartments." If rooms in a single-family house or flat building are rented, the structure will be marked "rooming house" or simply "rooms." Planners commonly are interested in knowing the number of dwelling units in each city block or portion thereof. By using these insurance maps, the number of such units in areas of small single-family or two-family attached houses may be calculated with a fair degree of accuracy by counting the number of "D's" in a block. This is especially true in the case of small communities. It must be recognized, though, that the presence of large dwellings in older neighborhoods may distort the totals. From time to time, some of these structures may be converted into several small apartments or kitchenettes, thereby creating additional dwelling units that are not reflected in the Sanborn map since single-family residential buildings seldom undergo interior inspection from year to year. The number of dwelling units in districts with mixed residential types can be ascertained only in a very general way.

Coverage of residential property is somewhat more complete in the seven west coast and mountain states and in the territories of Hawaii and Alaska than in the rest of the United States. In the former areas, insurance rates are based on the number of dwelling units. Consequently, the Sanborn map for cities located in these states and territories indicates the number of dwelling units in all buildings with six or more. In all other areas, the number of dwellings in apartment structures must be estimated after examining building dimensions—a rather unsatisfactory procedure.

Buildings used partly for commercial and partly for residential purposes are labeled for both uses, but it is difficult to determine the number of dwelling units, because the commercial use may occupy one or several floors. Although the map tells nothing about the physical condition of the building, one can, by examining the size of structures, their spacing, and the kind of material used in construction, delimit areas of building congestion, as well as locate in a satisfactory manner the more permanent structures.

The fire insurance map can be used as a basic source of information in studying commercial land use, but its utility in this respect is limited by the fact that it does not specifically identify all commercial activities by type of use. Most retail firms are marked with the letter "S" with no explanation as to type of store, except when it is considered an unusual fire hazard. An "S" on a multiple-story building may mean a store on the ground floor and residential or other commercial uses above, or the store may occupy the entire building. The map, as noted above, seldom is clear on this point. Large retail firms—department stores as well as specialty establishments—may have the company name. Multiple-story buildings occu-

pied by several firms may be designated "various occupants." Large office structures are identified by the building name, but small structures are merely labeled "offices." Such commercial activities as garages, theatres, hotels, and many others, also are identified.

The Sanborn map includes sufficient information to prepare a general map of industrial land use, to classify these uses by type of product or service and to locate the most permanent structures. It presents a good overall picture of an industrial district. In many instances, though, one cannot distinguish between manufacturing and wholesaling. Industrial activities that constitute special fire hazards—and the list is large—are mapped with the kind of business named. Medium-size and large establishments usually have the firm's name printed across the property. If this name does not reveal the nature of the industry, an additional statement does. In the case of many large establishments, the various divisions of the plant may be identified by such statements as "foundry," "stock room," "machine shop," and so on. In general, small firms are not shown with the company name; however, most of them can be identified as industrial uses and classified by such words as "printing" and "mattress factory." Multiple-use buildings are a special case. If each of several firms in a building fully occupy a distinct portion of the structure, the name of each business may show on that portion of the building it occupies. But if many establishments are scattered through the building it may be marked in large letters, "various industries," even though some of these businesses may be retail outlets. Since these multiple-use structures are found in most large cities, and since it is a real problem in many cases to decide which activities should be classed as "industrial," it is impossible to calculate accurately the total floor area used for industrial purposes; yet such information would be of great value to the city planner.

All types of transportation terminal facilities are shown on the map. Most of these are appropriately marked. Trucking terminals, railroad depots, freight houses, railroad repair shops, and airline terminal buildings and hangers can be located. Street car lines are not shown, but other railroad trackage is drawn on the base map in considerable detail. The railroad tracks, though, like the streets and alleys, are not kept up to date in the same manner as are other types of information.

All public and institutional buildings of any consequence are identified. The larger structures—schools, churches, hospitals, libraries, clubs, and other buildings—may be named; for example, "Whittier School." On the other hand, most small structures, such as fire stations, are identified by type of use only.

While the Sanborn map, from the planners' standpoint, is deficient in a number of respects, it is apparent from the above description that it furnishes a vast amount of land use data. The fact that it has such a complete and accurate coverage may be attributed to the comprehensive manner of assembling and plotting this information.

The original map for all cities as well as periodic corrections or additions that bring it up to date are made entirely from field investigations by fire insurance surveyors. To make an original map is a costly job; yet when the corrections pasted on an original sheet have accumulated to such a point that some of the buildings are not true to scale and the sheet with its many stickers is stiff and difficult to handle, it is necessary to resurvey the area covered by these obsolete pages and prepare an entirely new set of sheets for this part of the city. Depending on the volume of construction and demolitions, a map, or parts of it, may be in use for thirty or forty years before being replaced. In the case of a small town, the entire community may be remapped at one time, but in the case of a large center, the work will be done section by section; hence the map of the entire city usually includes old as well as new sheets.

Field surveyors assigned to a specific territory, which may include several small cities, or in the case of a large city only part of the urban area, check new construction, demolitions, and other land-use changes once a year in communities with over 25,000 population, and once every two years in smaller cities. During the building boom of the 1920's many large cities were surveyed every six months. On the other hand, the Sanborn Company with its reduced personnel was unable to maintain its normal correction service during the war years 1941-45.

While surveying their territory the field men inspect in a thorough manner some, but not all property. Industrial, commercial, institutional, and public buildings and large apartment houses and flat buildings are sub-

ject to a rather complete interior and exterior inspection. At the same time, architectural plans for new construction, if contemplated, also are examined. As existing single-family residences, from the insurance standpoint, are not of major significance, they are re-examined only casually from the street and alley. All new houses, on the other hand, are checked carefully.

Land-use changes are recorded directly on sheets of the Sanborn map carried by the field surveyor. Sections of the map upon which his findings are noted are sent to his headquarters office, examined for legibility, and then forwarded to the cartographic and printing division at Pelham, New York where all correction slips are made.

At regular intervals, the correction slips or "stickers" are pasted on the maps of those owners who have contracted for this service. The date on which corrections are added to the map, as well as the date of the field survey, are recorded in the front of each volume. The time lapse between the two dates is three to four months. The entire map of a small city may be corrected at one time, thus bringing all land use within three to four months of being up to date. On the other hand, the map of a large city is corrected section by section. At any one time, then, some parts of it may be three to four months, and part a full year, behind current conditions.

Since from the standpoint of the fire insurance underwriters it is desirable to have uniform maps for all cities, the Sanborn Company has made maps for upwards of 11,000 communities in the United States and in the territories of Hawaii and Alaska. As a result of this wide coverage, more and more planners and other students of urban land use will be consulting these maps. Considering this development, the Sanborn Company may find it advisable to change the scope of their research and include additional information of interest to these people—such information, for example, as the building date of all structures, the number of dwelling units in a building, and a more complete identification of all industrial and commercial uses. With these additions, the map should become an even more useful source of information for those who are studying and planning urban areas.

ROBERT L. WRIGLEY, JR.

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Book Reviews

World Rubber and Its Regulation. By Klaus E. Knorr. California: Stanford University Press, 1945. (Food Research Institute, Commodity Policy Study No. 6.) pp. 265. $3.00.

The Rubber Industry: A Study in Competition and Monopoly. By P. T. Bauer. Cambridge, Massachusetts: Harvard University Press, 1948. pp. 404. $7.50.

During most of the interwar period, excess capacity for the production of crude rubber remained an unsolved problem despite two major attempts at regulation. With the wartime addition of synthetic rubber production facilities, the postwar industry capacity is nearly twice as great as consumers' requirements. Since it is improbable that the demand for rubber will increase sufficiently to utilize this capacity, adjustment must come through a reduction in capacity either by the process of competitive elimination or by a long-run policy of regulation by international agreement. In order to disclose the magnitude of the problem and to suggest possible and probable solutions, both of these studies analyze the economics of production, price, marketing, and consumption both of crude and synthetic rubber, as well as the earlier attempts at regulation.

The authors are in agreement that in the short run, the supply of crude rubber is highly inelastic, and the demand for crude rubber, being a derived demand, fluctuates in accordance with cyclical changes in demand for manufactured rubber goods in the consuming countries. Thus, the price of crude rubber is highly unstable in a free market. In the long run, capacity expands with rising prices, but regulation has prevented reduction in capacity which might have resulted during periods of declining prices.

There is also agreement that the major attempts at regulation have been unsuccessful. The International Rubber Regulation Agreement of 1934 cast aside the arbitrary sliding-scale system of establishing export quotas—the inflexible basis of the Stevenson Plan from 1922 to 1928—and placed such decisions in the hands of an international committee of rubber producers. The agreement prohibited new plantings and controlled replanting. But quotas continued to be assigned to efficient and inefficient producers on the same percentage basis, and the least efficient producers were not eliminated. The committee, despite advice from rubber consumers, continually underestimated expanding consumption in the prewar years which resulted in artificial scarcity. The effects of regulation were thus unsatisfactory.

The postwar situation promises to be more difficult because of the actual and potential competition of the synthetic rubber industry, and because nations are paying increasing attention to the problems of national security. Both authors agree that excess capacity should be reduced or eliminated by forcing the least efficient producers of both crude and synthetic rubber out of production, but they disagree as to the method whereby this should be accomplished. Knorr believes that this should be done by government determination, and Bauer by free competition. Both agree that the establishment of buffer stocks might serve to eliminate violent fluctuations in the price of crude rubber. Knorr also recommends the retention of a basic synthetic rubber industry in the United States of about 250,000 tons' annual capacity as a national security measure.

Professor Knorr's book, published at the end of the war, was written to serve as a background for the discussion of the postwar internal policy of the rubber industry, and of the national policy which the United States should adopt toward the industry. Professor Bauer's study, written with the advantage of personal observation in the Far East since the war and the availability of postwar materials, is a more detailed and more complete study of the economics of the industry since 1929. He has attempted to make reasonable corrections of the very imperfect statistics of the industry. His analysis of the technology of synthetic rubber and of its costs is superior,

and he has paid considerably greater attention to the economic and social welfare of the participants in crude rubber production both in his analysis and in his recommendations for future policy in the Far East. Both studies are well-organized and well-written. The difference in opinion over future policy largely reflects the difference in position of British and American Interests, Professor Bauer of the University of London recommending a policy most advantageous to the British Empire as a producer of crude rubber, and Professor Knorr recommending a policy most advantageous to the United States as the leading consumer of crude rubber and the owner of a very large, (probably) high-cost synthetic rubber capacity.

WILLIAM V. WILMOT, JR.

University of Wisconsin.

Hawaii: A Century of Economic Change 1778-1876. By Theodore Morgan. Cambridge: Harvard University Press, 1948. pp. 260. $3.00.

Morgan begins his story when Hawaiians were trading pigs and vegetables for nails, a time when their economy was still fully internally caused. In the years following 1778, after Captain Cooke's discovery, western influence expanded rapidly, and the native culture and economy crumbled under the impact of the white man. The consequences of foreign intrusions on native health, habits of life, and economic adjustments was a slow catastrophe, none the less destructive because spread out over decades. By the mid-forties there appeared at the port of Honolulu a permanent working group, earning money incomes. Economic change from 1844 to 1875 was dominated nearly completely by land reform, whaling and sugar. The rise of sugar marked the beginning of Hawaii's modern economy. Accompanying all these transitions was the missionary effort which "rather checked than accelerated" the decadence of the Hawaiian.

South Sea people have changed their religions; they have given up social and political institutions with impunity, but destitution has followed separation from their lands. Mr. Morgan rightly points out land reform as a major landmark in Hawaiian history. It was repeatedly argued there that foreigners could not be expected to bring in much needed capital to develop the land until their ownership rights were secure. Native resistance to abrogation of feudal tenure took the form essentially of delay. Discussion, compromise, and partial pronouncements and laws inched the way toward fee simple tenure in contrast to resistance by force and bloodshed in other parts of the Pacific. Once obtained, the little *kuleanas* of the Hawaiians, alas, passed rapidly into the hands of rising sugar cane planters and rice farmers. In other islands in the Pacific prohibitions on the sale of their lands have saved the indigenous people.

The acculturation process which Morgan describes for Hawaii has gone on longer and faster in Hawaii and in New Zealand than in Samoa, Fiji, New Caledonia and other archipelagoes of the Pacific. I observed in New Zealand that dairy farming has been very effective in changing some of the old social institutions of the Maories. Fijians have reached only the first stage in their westernization—if such a process is capable of measurement. I visited several projects in Fiji where the indigenous population had acquired a little purchasing power through the sale of "money crops."

The author of this book portrays in a graphic way what Hawaii was like before the western invasion—an economy that suggests the "natural" character of the feudal order. He tells how the need of fur traders for fresh provisions and water, the Chinese demand for sandalwood, the desire of New England churches to spread the gospel, the requirements of New England whalers for safe anchorage, repairs, and food supplies, and how the varying external demands for the Islands' agricultural produce successively and profoundly influenced the native patterns. He might well have given more attention to the alienation of native land and its immediate economic and social effects on the indigenous people.

The author tells the dramatic story with objectivity and understanding. The book is all the more important in these days when native peoples are so much the concern of colonial governments and of the United Nations. The book is worth reading for everyone who wants to know about the development of new native social, economic and cultural patterns as a result of the impact of

of the west, as well as for those who are interested in the economic development of what will probably be the 49th state in the Union. It has an excellent bibliography of fourteen pages and a good index.

JOHN WESLEY COULTER

United Nations,
New York.

Agrarian Unrest in Southeast Asia. By Erich H. Jacoby. New York: Columbia University Press, 1948. pp. xvii, 287, inc. 7 maps. $4.00.

Southeast Asia is squirming on the horns of a Malthusian dilemma. It had, in 1940, a total population of some one hundred and fifty millions. Forty years from now that figure will probably be doubled, and the food supply cannot keep pace with this increase. In many sections the soil is already being cultivated with a maximum intensity, yet the people are near starvation.

Since these countries are almost exclusively agricultural, the pressure for land is critical. Individual landholdings have been parcelled to the extent that they are too small to yield the peasant a subsistence. Hence he falls victim to landgrabbers and moneylenders. On the one hand, landholdings become concentrated under a wealthy absentee landlordism; on the other hand, there is poverty-bound sharecropping. The crisis is further aggravated by the fact that these landlords and creditors are generally of a racial minority—Indian or Chinese.

If Southeast Asia's domestic economy is dependent on these Asiatic foreigners, her international trade is dependent on Western colonial powers. (Economically, the United States is one of the largest of these.) Southeast Asia trembles at the slightest fluctuations in Western markets: her few but essential exports—raw materials such as rubber and tin —are completely dependent on them. Her people are more at the mercy of such an economic system than participants in it, and this, with their precarious toehold on a subsistence, is a taproot of their present revolts in one country after another of that corner of the globe.

In a splendid introductory chapter, Dr. Jacoby delineates the common denominators of these problems for the whole of Southeast Asia. Each of her countries has, however, its own cultural and geographic features, and also a more or less distinct economic and political status. They are subject, either fully or partly, to either Britain, Holland, France, or the United States. Therefore, in devoting a chapter each to Java, Burma, Malaya, Indo-China, The Philippines, and Siam, Dr. Jacoby surveys the various particular forms of these problems.

Indo-China, for example, under the French policy of "assimilation" was long a classic example of complete dependence to a European power and isolation from its Far Eastern neighbors. This policy maintained that "colonial production must be limited to supplying the mother country with raw materials and with non-competitive products." Siam, however, which is only a semi-colonial territory, has been unable to develop its resources because it did not receive full political and economic backing.

Throughout this masterful volume, Dr. Jacoby also analyzes, provokingly though soberly, many of the proposed solutions for these problems. He demonstrates, for example, that resettlement programs for Java cannot yield more than local relief, and that industrialization may further sharpen distinctions between workers and owners, and also cause technological unemployment. Dr. Jacoby, himself a leader of cooperatives in Europe, looks forward to their greater development in Southeast Asia, although he grants that so far "they have been far from successful," and that "cooperative democracy can hardly be conceived before the peasant is tilling his own soil." In sum, "The people of Southeast Asia confirm their being a nation by a daily plebiscite for solution of the land problem."

As Professor Condliffe says in the foreword, Dr. Jacoby and The Carnegie Endowment, his sponsors, have indeed made "a material contribution to one of the greatest questions likely to confront American policy for decades to come."

ALFRED G. SMITH

University of Wisconsin

Books Received (Notes on)

Instability of Forest Land Ownership in Western Oregon and Washington, 1932-41. By Sinclair A. Wilson and Paul E. Malone. Portland, Oregon: U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station, June 1948. pp. 57.

Since 1931 the Forest Service has made three inventories of the situation in regard to tax delinquency and tax reversion in selected western Oregon and Washington counties. This publication summarizes the results of these inventories, discusses the causes of reversion of private forest land, and suggests the steps that might be taken to reduce reversion in the future.

The 38 counties of western Oregon and Washington comprise the "Douglas-fir region," which is one of the great timber-growing regions of the United States. In this region tax reversion grew steadily worse through the 1930's. In 1941, 11 percent of all private land had reverted in the Washington counties and 15 percent in the Oregon counties. Tax delinquency and reversion centered around forest land and mostly around that covered with commercial conifers. As of 1941, 48 percent of all privately-owned commercial conifer land was involved in delinquency or reversion in four of the counties. Over nine-tenths of the reverted land in the four counties was conifer land, with conifers mostly of less than saw-timber size.

The inventories revealed that reversion increased as size of property holding decreased. Factors contributing to reversion of small holdings are believed by the authors to be (1) inadequate size for profitable forest operation, (2) inaccessibility, (3) lack of forest management program, (4) lack of experience in forestry, and (5) lack of credit for long-term forest operation. Factors contributing to the reversion of both large and small holdings were believed to be (1) loss of timber value by cutting or fire or both, and (2) the burden of taxation. The authors suggest that tax reversion was more severe in Oregon than Washington because (1) Oregon had provided less support from state revenues to supplement the property tax revenues of local governmental bodies, and (2) the Oregon counties were less prompt in holding foreclosure sales and gave less acceptable tax titles.

The tree-farm, forest-conservation movement that has grown up since 1951 is looked upon by the authors as reducing the hazard of future tax reversion by creating sounder ownership intent and better management practices on private forest lands. Private management is offered greater technical aid under government conservation programs. Fire protection facilities have been improved and both utilization and market facilities have been expanded. Controls such as the Oregon and Washington forest practice laws also are viewed by the authors as favorable to reduced tax delinquency in any future depression. On the other hand, they point to the lack of basic improvement in forest credit for either the "long-run" or the "lean" years, and to the continuing unavailability of forest-fire insurance. The property tax remains the largest single source of public revenue in both states, but laws have been enacted in these states under which taxes on lands under reforestation can be deferred by the payment of a nominal annual fee. A portion of the taxes on forest crops in Washington can now be deferred until the forest crop is harvested.

The authors suggest as lines of action to aid in reducing tax delinquency and reversion: (1) a positive program of general land-use planning; (2) improved cutting practices; (3) better fire control; (4) reduced waste in forest utilization; (5) simplification of local government structure; (6) improved tax administration; (7) more adequate forest credit and forest insurance; and (8) a full program of technical aid to forest owners and wood processors. Not mentioned by the authors, but considered by some to be a requisite in a land-use-adjustment and forest-conservation program in this region, would be the development of family-owned and operated

forest farms on which the major returns would be from efficient forest enterprises operated in accordance with conservation principles. These units would replace large numbers of low-income crop and livestock farms now located on land best suited to permanent forest cover.

KARL S. LANDSTROM

Bureau of Agricultural Economics,
U. S. Department of Agriculture

Mapping For Planning. By E. B. Wilkens. Chicago: Public Administration Service, 1948. pp. 25. $1.50.

Land use classification and delineation has necessarily been the concern of a large professional group working on the various phases of rural and urban land problems. Techniques have evolved particularly in consideration of rural land which are fairly standard and which allow for variation to suit the particular situation. Development of techniques for use in basic urban land use studies has been progressing to the point where the appearance of this publication is particularly significant.

Mapping For Planning summarizes in a clear and concise manner the techniques of delineation and the breakdown of the multitude of land uses found in urban areas into major use categories. Undoubtedly there will arise differences of viewpoint as to designation of a certain land use in a major use category. That has been the case in the past and this guide makes no claim to settle such differences for eternity. But this listing will provide a basis for discussion and a firm anchorage from which variations can be made to suit the specific circumstances.

At a time when urban planning efforts are increasingly in demand and when trained technicians are scarce it is well that the Public Administration Service has made this basic material available. The experience summarized in the publication will save much time for those inaugurating basic land use studies and may help to standardize presentation of urban planning data.

ROBERT M. LILLIBRIDGE

Federal Housing Administration,
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Bulletin IAI (International Agricultural Institute). Published by the Institute for International Collaboration in Agriculture and Forestry, Prague, Czechoslovakia. II, 1949, No. 1.

This news bulletin is a publication of the agricultural section of the Cominform. News items in English are grouped by countries, following a page and half of reports on activities of the International Agriculture Institute, which corresponds to the Food and Agriculture Organization of the United Nations. The countries are listed alphabetically and include: Albania, Austria, Bulgaria, Canada, Czechoslovakia, Germany, Hungary, Israel, Italy, Norway, Poland, Rumania, Sweden, Turkey, and the U.S.S.R.

The statistical material is of doubtful value, coming as it does from an office where reports are based on political considerations. Most data are given in percent or in media of exchange (zloty, corona, ruble) of uncertain values.

This bulletin show clearly that collectivisation under Soviet inspiration is under way in all countries of eastern Europe. The data reveal also certain signs of resistance of rural population against collectivisation. For example: (1) under the heading, "Rumania," (page 26) the bulletin reports the "untiring work of the members of the Workers' Party in the villages in helping to unmask the rich farmers who sabotaged the work in the fields by hiding grain and ploughs." (2) Under "Hungary" (page 16) is found a definition of "kulak" as an enemy of the people. (3) Under "Bulgaria" (page 4) reference is made to "hidden enemies."

Much attention is given to the development of land reform in Italy where Italian communist organizations are widely reported to be active in agricultural movements.

The report on Turkey emphasizes the following points: (1)Agriculture dominates the economy of Turkey as indicated by the fact that 80 percent of the population are engaged in farming. (2) The distribution of land is unequal. Big estates cover a large area, while medium-size farms occupy a relatively small area. (3) Industry in Turkey is of such small proportions that the rural proletariet

cannot be absorbed into the cities. (4) Agriculture is little mechanized. Under the heading, "U.S.S.R.," is an announcement of "training courses for Armenian Farmers." (page 39) The courses include lectures on "Marxism-Leninism and natural sciences." It is evident that the courses prepare for political as well as for agricultural programs! It is entirely possible that Armenian trainees will be used for both types of programs in neighboring Turkey.

It is the opinion of this reviewer that the Turkish Government will seek to solve these problems. Only a sound land economy can give a solid base to the military protection received by Turkey now, according to the Marshall plan. To accomplish this three steps are necessary: (1) the Turkish land reform of 1945 should be continued to increase the number of middle-size farms throughout the country; (2) irrigation projects should be developed to provide immediate employment for the desperately poor in the rural areas, and to enlarge the agricultural land acreage of the country; and (3) the grievances of the Armenian minority in Turkey should be promptly satisfied by the Turkish government.

DIMITRI PRONIN

University of Wisconsin

The Business of Farming. By Herrell DeGraff and Ladd Haystead. Norman: University of Oklahoma Press, 1948. pp. 238. $3.00.

A general manual of management for the man who farms, who wants to farm, who owns a farm or who wants to know what elements make for success or failure in farming. This book is a manual of planning, procedure, and production for the average small-farm operator who wants to make his operation a financial success; for the large-farm operator who gives considerable thought to more efficient operation of his holdings; and for the business-man who owns land and is interested in better management of his land through changing economic conditions.

War Economics of Primary Producing Countries. By A. R. Prest. New York: Cambridge University Press, The Macmillan Company, 1948. pp. 300. $4.50.

An investigation of the general economic problems of primary producing countries during the 1939-45 war. The author describes the war contribution of a number of countries in turn—India, some of the countries of the Middle East, and two Crown Colonies—Nigeria and Trinidad. He determines by what means the war contribution of each was achieved, and what the principal reactions were upon that country's internal economy. Much of the material is based upon personal interview or correspondence with people in this country and abroad.

Open Markets. By Vernon A. Mund. New York: Harper & Brothers, 1948. pp. 264. $3.00.

A study of markets and the pricing process. Two-thirds of the book constitutes an historical survey of the rise and decline of open markets in Europe and the United States. The balance of the discussion is concerned with the significance of open markets as an indispensable condition of competitive prices and free enterprise. The author offers proposals to solve the economic problems of monopoly by the governmental establishment of new free and open markets for our basic industrial and agricultural products.

Zoning Digest. American Society of Planning Officials. 1313 East 60th Street, Chicago 37, Illinois. Annual Sub. $150.00

The American Society of Planning Officials has, since its inception, recognized the need for reporting and interpreting zoning decisions. For a while the Society was able to

cover zoning decisions in one page of its monthly *News Letter* but, for the past several years, complete coverage would have required twelve or more pages and this was physically impossible. But the subject is so vital, so important to the future development of our cities, that the Board of Directors of the Society has recently voted to add the staff and expense necessary to publish a comprehensive coverage of zoning decisions in United States—under the title *Zoning Digest*. This publication will continue in the form of the former "Zoning Notes," first prepared by Alfred Bettman and after his death continued by Walter H. Blucher, member of the Michigan Bar. Mr. Blucher prepares the material in *Zoning Digest*. The publication is issued monthly. It contains in addition to a report and interpretation of all recent zoning cases, an article discussing some phase of zoning; and it is the only coverage of this nature in this highly technical field. It should fill a long-felt need for attorneys, planners, and zoning board members.